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THE
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ORIGINAL ARTICLES.

LETHARGIC ENCEPHALITIS: A CLINICAL LECTURE.*

BY T. K. MONRO, M.A., M.D.,
Regius Professor of Medicine, University of Glasgow.

LADIES AND GENTLEMEN,—I should like to call your attention to-day to a group of four cases which have been admitted to our wards within the past few weeks. They have all been characterised by grave symptoms of nervous disease, which set in or developed in such a way as to point to serious disturbance in the functions of the brain, and yet there has been a remarkable diversity in the actual symptoms and signs manifested in the individual cases. You have already had an opportunity of seeing these patients at the bedside, but I wish to show them to you again to-day, and then to discuss their condition with more detail than on previous occasions.

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* Delivered in the Western Infirmary on 8th June, 1920. Certain cases described or referred to but not actually shown at the lecture are omitted here; but I retain the two early ones because they are of interest to me, historically, and also a recent one which corresponds more closely to the "classical" picture of the disease than any of the demonstrated cases does.

CASE I. *Summary.*—Diplopia, mental disturbance (excitement and lethargy), twitchings of right limbs and face, incontinence of urine, pyrexia, conjunctivitis, laryngitis, defective movement of eyeballs, nystagmus, loss of pupillary contraction to light, paresis of left face, congestion of optic discs.

W. McE., 19 years of age, gasworker, was admitted on 21st May, 1920. Present illness began three days ago. His parents noticed a staring look in his eyes. He did not sleep that night, and was very restless.

20th May.—Went to work and made no complaint until evening, when he said he saw double.

21st May.—Staggered on rising, but went to work. Came home at 1 o'clock, and spoke loudly and whistled a lot. Right side of face twitched much.

On admission.—Gait jerky. No paresis detected. Frequent twitching of right side of face. Slight convergent strabismus. Diplopia. Knee-jerks increased. Plantar reflexes extensor. Abdominal reflexes absent.

Shortly after admission.—Great excitement, muscles of body generally twitching. Patient whistling and singing. Temperature 102°. Retention of urine. No sign of disease in chest or abdomen. Urine normal.

24th May.—Patient stuporose. Incontinence of urine. Twitching at times in face, arm, and leg of right side.

25th May.—During past night semi-comatose, with muttering delirium and twitching. Conjunctivitis in left eye. Improved in course of the day. On being roused this evening, sat up and took food, and then immediately went off to sleep again. Temperature 101°; pulse 116.

26th May.—Improving. Puts out his tongue when told. Still fevered. No history of vomiting. To-day he says that he did not have headache even at the beginning. Left disc highly congested; fundi otherwise normal. Left conjunctiva still highly congested.

2nd June.—Almost all along patient has complained of throat being dry and painful. General redness of fauces. Temperature has declined. Diplopia. Slight defect of movement of eyes to the left, with slight nystagmus. Pupils medium and equal, scarcely contracting at all to light. Appearance of drowsiness less than formerly, but still some ptosis. On showing the teeth the left face moves less than the right. There is now almost complete aphonia (found by Dr. Syme to be due to acute laryngitis). Abdominal reflexes now active. Incontinence has ceased. Blood count—Reds, 5,090,000: whites, 9,800 per c.m. Wassermann test (blood) negative. *Cerebro-spinal fluid.*—Pressure considerably increased. Scanty mononuclear cells. No organisms found in film or on culture.

3rd June.—Both discs highly congested.

5th June.—Pupils somewhat large: practically no contraction to light.

[*11th June.*—Patient still improving.]

Treatment.—Hexamine, 10 grs. 4-hourly.

CASE II. *Summary.*—Left hemiplegia, diplopia, disturbance of speech. Recovery. Three weeks later, right hemiplegia with paresis of face and tongue on *left* side, diplopia, headache, incontinence of urine and fæces, defective movement of eyeballs, great impairment of speech.

J. McL., 17 years of age, labourer, was admitted on 17th May, 1920. When at work three weeks ago patient suddenly lost power in left arm and leg, but was able to walk home. Had diplopia. Speech was slurring and difficult. Well in three days, and then back to work, troubled only with dizziness.

Three weeks later, viz., on 15th May, felt dizzy on rising, and fell. Went to work in forenoon, but could not go in afternoon, as he saw double and had lost power in *right* arm and leg.

15th May.—Incontinence of urine and fæces. This second attack was attended with headache. Two weeks ago he had noted a pimple on his left cheek, and he said that the application which he used brought out more blisters. When he was admitted there was a large crust on the cheek, suggestive of impetigo.

On admission.—Paresis of right limbs. Sensation preserved. Abdominal reflexes present on both sides. Speech slow and thick. Slight divergence of left eye. Diplopia on looking to right. No nystagmus. Nothing abnormal in chest, abdomen, urine, or fundi.

25th May.—Right arm and leg now completely paralysed. Paresis of right face. Patient highly emotional, laughing and crying. Speech difficult and indistinct. Temperature, pulse, and respiration continue normal. Slight paresis of face and tongue on *left* side. Patient obeys instructions. Movement of eyes to left defective. Says he sees double. No vomiting since admission (if at all). Patient says he had headache only at the beginning.

31st May.—Much improved. Power returning to limbs (in arm from below upwards). Speech improved. Less emotional.

2nd June.—Blood—Reds, 3,970,000; whites, 13,000 per c.m. Wassermann test (blood) negative.

6th June.—Pain during past week in right upper limb, so severe last night as to prevent sleep.

Cerebro-spinal fluid.—Pressure even less than normal. Cells mononuclear: not numerous. No organisms found. No increase of globulin.

[*11th June.*—Patient steadily recovering.]

CASE III. *Summary.*—Headache, drowsiness, disturbance of speech, nystagmus, weakness of legs.

Agnes L., 34 years of age, shop manager, was admitted on 17th May. On 10th May, while walking, had sudden severe pain in head, legs felt weak, and she fell. Was assisted to rise, walked home, and went to bed. On 16th, speech suddenly became indistinct and confused. She says she knew what she wished to say, but her mother could not understand her. Since then speech has improved. No paresis or sensory loss detected. Knee-jerks active. Abdominal reflexes absent. No diplopia or other evidence of ocular palsy. No incontinence.

26th May.—Temperature since admission has not exceeded 99·4°. Headache now only occasional and slight. At first it was "terrible—a fearful pain." She says she had slight vomiting on the first day only, and that for the first two days in hospital she felt very drowsy. Optic discs almost, if not quite, normal. *Cerebro-spinal fluid* clear, pressure normal, no excess of globulin: Wassermann test negative: cell count, 7 small lymphocytes per cm.

2nd June.—Improvement continues. Occasional hesitation about a word; she says it sticks at her mouth. Mere suspicion of paresis of tongue and lower face. Nystagmus on strong deviation of eyes to either side. Right pupil slightly larger than left. Abdominal reflexes now active. Blood count—Reds, 4,600,000; whites, 12,500 per cm.

These cases are examples of an affection which has become known to us as a distinct disease only within the past three or four years. In 1917 an epidemic occurring in Vienna was described by Economo, and was named by him *encephalitis lethargica.* In spring, 1918, there was an epidemic in Paris, and Netter called the condition *encéphalite léthargique épidémique.* About the same time groups of cases were recorded by Wilfred Harris, of London, and Arthur Hall, of Sheffield. Their communications both appeared in the *Lancet* for 20th April, 1918. Fresh names were applied to the disease by these and subsequent writers, so that the nomenclature soon became a varied one. Rapidly accumulating experience, both clinical and anatomical, soon established the fact that the disease is an encephalitis—a non-suppurative inflammation of the brain—and it is now generally agreed that it is distinct from the disease which has been long known as polioencephalitis. This last is, of course, due to the brain being attacked by that virus which, when it attacks the spinal cord, causes poliomyelitis or infantile paralysis.

CASE IV. *Summary.*—Headache, drowsiness, mental disturbance, paresis of internal and external ocular muscles and of facial muscles: lymphocytosis and increased pressure of cerebrospinal fluid: optic neuritis with hæmorrhages: albumen and casts in urine.

Mrs. P., 42 years of age, housewife, was admitted on 1st June, 1920. Patient was a munition worker, but health broke down about October, 1918, and thereafter she suffered from neurasthenic symptoms, including headache and weakness. Suffered also from menorrhagia, and had a trace of albumen in the urine.

Recently had been rather better, but in middle of May an abrupt change took place. Headache became intense, and her husband noticed that she was drowsy, and that she wandered a little for a time. Three or four days later she lost vision in the left eye almost completely. There was no diplopia or vomiting.

On admission.—Temperature 99·4°, pulse 100, respirations 22. Slight paresis of lower face, especially on right side. Lies on her back with eyes closed or partly closed. Defective power of deviation of eyes to left. Right pupil contracts very slightly to light: left not at all. Patient is intelligent in conversation, though she looks so drowsy. Knee-jerks and abdominal reflexes absent. No disturbance of bladder. Has had pain in head and at back of neck.

Short systolic murmur at apex: increased pulsation in suprasternal fossa: a trace of albumen and a few hyaline and granular casts in the urine: blood-pressure (rt. brach. syst.) 180 mm. Hg.; well-marked optic neuritis, with hæmorrhages.

3rd June.—Cerebro-spinal fluid clear and slightly yellowish; pressure increased; excess of globulin; cell count, 103 lymphocytes per cm.

4th June.—Improvement continues. Pain much less. Mere suspicion of paresis of lower face and tongue. Movement of eyes to left still defective.

In this case the mode of onset of the recent illness, the headache, insomnia, slight delirium at the beginning, defective pupillary action, defective movement of the eyeballs, and paresis of the lower face, together with the characters of the cerebro-spinal fluid, all point to encephalitis. The optic neuritis has probably the same origin, though, in my experience, such marked changes in the fundi are unusual in this disease.

But the case is not quite simple. The high blood-pressure, the albuminuria, and the tube-casts raise the question whether vascular disease within the head could not account for the symptoms. In my opinion, this is not sufficient to explain the distribution of the pareses or the abnormal character of the cerebro-spinal fluid. It is more likely that encephalitis was the cause of the symptoms which set in abruptly three weeks ago, and that this gave rise to such an increase of pressure within the cranium as to precipitate rupture of intra-ocular blood-vessels, these latter having become degenerate as a consequence of high blood-pressure of old standing. Judging from her progress since admission, she is recovering from the encephalitis.

The earliest distinctive case of this kind which attracted my attention was admitted to the Western Infirmary on 25th April, 1918.

CASE V. *Summary.*—Headache, delirium, lethargy, incontinence, fever.

Joseph McK., 40 years of age, munition worker, was admitted on 25th April, 1918. About a week before admission had influenza with severe pain, especially in the arms. Had not quite recovered when present illness set in on 24th April, with severe headache. There was no vomiting or rigor.

On admission.—Quite conscious, answers questions intelligently, though friends said he was delirious the night before. Temperature 99·8°; pulse 98. No stiffness or pain at back of neck. Left pupil medium-sized, right slightly larger. On night of admission was delirious and passed evacuations in bed. At times he picked at the bedclothes.

29th April.—Still delirious. Headache no longer troublesome. *Cerebro-spinal fluid.*—Increased pressure; clear: contains scanty mononuclear cells.

Wassermann test (blood) negative.

5th May.—Moderate fever, for which no cause is found in chest, abdomen, or skin. Urine normal. Patient seems intelligent when spoken to, but continues to have talkative delirium and restlessness when left to himself.

12th May.—Patient free from delirium and fever since 8th inst.

29th May.—Patient left hospital feeling quite well, but rather weak.

The predominant symptoms in this case were the somnolence or lethargy, the fever, and the incontinence. Though the stupor was so marked, patient put out the tongue when told to do so. He understood what was said to him, and he answered questions intelligently: yet when he was left to himself, he would assume the appearance of deep sleep, and, at night especially, would be restless and delirious. For the first three weeks of his residence he was continuously in this state of lethargy, and took no interest in his surroundings.

I was puzzled how to index this case, but eventually put it down as "(?) polioencephalitis." The condition seemed to resemble polioencephalitis as generally understood more closely than anything else that occurred to me, and yet I was not satisfied with this classification, and accordingly the query was inserted.

Another of my early cases came under observation in a different way.

CASE VI. *Summary.*—Headache, fever, lethargy, diplopia, ptosis.

Miss M., 38 years of age, was referred to me by the courtesy of a Glasgow oculist. She had been healthy up to five or six weeks before she consulted me, and had been leading a very active life, when one day, on going into the street, she felt giddy, had double vision, and "collapsed." For three or four days she slept "like one drugged," did not remember anything, and had to be wakened for meals. There was drooping of both upper eyelids. At first there was slight fever with pain at the back of the head, but there was no vomiting.

When I saw her on 12th June, 1918, she still had a tight feeling at the back of the head and at the back of the eyes on waking, and a sense of weakness in the legs when going about. Diplopia was still present, but was becoming less marked. She was now able to raise both eyelids, the pupils contracted actively to light, and the optic discs were normal. The paresis of the left internal rectus was now the only evidence of lesion of the oculomotor nerve. About a year elapsed before this lady completely regained her general health, and even then the diplopia had not entirely passed away.

My diagnosis at the time was "slight polioencephalitis." As the history and symptoms pointed to inflammation of the oculomotor nuclei, this designation was accurate, both as representing the actual facts recognised, and also from the point of view of the derivation of the name. But, manifestly, the case belongs to the group which has now come to be very generally known as lethargic encephalitis.

Having once started in Britain, the epidemic seems to have spread quickly. My early distinctive cases appeared in the first half of 1918. The London and Sheffield cases were published in April of that year. In July Dr. Marshall, of Rothesay, recorded a case which he had seen there in a child in May.[1] In July and August, Dr. Chalmers and his colleagues in the Glasgow Health Department recorded cases which had come under their notice.[2] In October Dr. Leonard Findlay published cases which he had seen at the Royal Hospital for Sick Children in March and June of the same year.[3] In 1919 the disease showed itself in the United States. The vast amount of literature which has appeared in recent times dealing with this disease suggests that the epidemic is widely spread in civilised countries. It has been particularly prevalent in the Glasgow district for some time past, and cases are occurring in groups at the present time, just as cases of pneumonia often do.

Increased experience of lethargic or epidemic encephalitis has led to an increase in the number of recognised types or varieties of the disease. Some cases are so slight that the patients never consider themselves to be seriously ill. Diplopia may be the principal symptom of which they complain, or it may be drowsiness which has persisted for days or weeks, having set in somewhat abruptly, and constituting an experience with which the patient is quite unfamiliar. But all degrees of severity are met with, and there is a formidable minority which terminate fatally. The variety which was the earliest to obtain recognition is characterised by drowsiness, ocular paralysis, and fever. These three symptoms, indeed, are sometimes referred to as the cardinal symptoms of the disease. To illustrate this type, let me quote some notes of a case which I saw in consultation on the opening day of the present term.

CASE VII. *Summary.*—Headache, diplopia, ptosis, drowsiness, delirium, swelling in left orbital region.

Miss S. M., 24 years of age, clerkess, was seen on Wednesday, 21st April, 1920. Headache for several weeks. Stopped work last Thursday; headache had been violent for two or three days before she stopped. Double vision from Friday till yesterday. Diplopia to-day on looking strongly to either side. No vomiting. Bowels moved freely (after medicine) into the bed in sleep.

Slightly drowsy yesterday; very drowsy to-day. Says she is "awfully sleepy," but she can easily be roused. At times has talked nonsense, but at visit seems quite intelligent, though voice is rather feeble.

From Friday till Sunday there was swelling in left orbital region, tending to make the eye seem sunken. Giddiness on trying to rise. Slight fever. Pulse 118. Bilateral ptosis with overaction of frontales. Tongue slightly dry. Power of showing teeth feeble. No certain palsy except in ocular regions. Abdominal reflexes active. No recognisable optic neuritis. Chest and abdomen normal.

The symptoms of lethargic encephalitis are accounted for by a form of inflammation of the brain which shows a special tendency to attack the pons and mid-brain. The nervous tissue and the perivascular lymph-sheaths in the affected region are infiltrated with lymphocytes; and among other changes observed are congestion, œdema, hæmorrhage, degeneration of the nerve-cells, and proliferation of the neuroglia.

There is no reason to doubt that these changes are due to invasion of the body by a living virus. So far as I know, the organism itself has not yet been seen, but, if certain investigations can be relied upon, it is a filterable virus, which is capable of inducing the disease in animals when inoculated intracerebrally, but which cannot be grown upon ordinary culture media.

As you will gather from what I have said, the diagnosis is often difficult. Cases are apt to be sent into the fever hospitals as cerebro-spinal fever, or under the suspicion of being that disease. Cerebral tumour, cerebral softening, cerebral hæmorrhage, subacute disseminated sclerosis, and influenza are among the other diseases that may occur to the mind of the practitioner. Polioencephalitis of the kind long known is not very likely to trouble a man who has already seen cases of that affection. The mode of onset, the distribution and character of the palsies, the concomitant symptoms, and the progress of the cases, are not the same in the two affections. Moreover, lethargic encephalitis is most common in adults, and has hitherto been chiefly prevalent in the winter and spring months, although now that the warm weather is setting in it seems to be more common than ever here. Polioencephalitis, on the other hand, is most common in children, and in the hot months of the year.

I shall say very little about treatment, because very little that is satisfactory can be said. Numerous drugs and other agents have been tried, but no specific cure is known, and it is doubtful if any means yet employed has any decidedly beneficial influence. In the meantime my practice is to give hexamine. This is one of the few useful drugs which the cells of the choroid plexus allow to pass into the cerebro-spinal fluid. For a long time I have used it in cases of meningitis not due to the meningococcus, and a considerable proportion of such cases recovered. Whether this was because of, or independently of, the hexamine, I do not venture to say. They may have been influenzal or pneumococcus cases which might have recovered without drugs. In one instance the family medical adviser and I were both pretty confident that it was tuberculous meningitis, and yet the girl recovered under hexamine. Accordingly, I give this drug by the mouth in lethargic encephalitis, and I note that M. Netter, the leading authority in France, approves of it.* Symptomatic treatment is, of course, sometimes requred in addition, as in Case IV, where the headache was relieved after the administration of caffeine and phenacetin.

It is not necessary to assume that lethargic encephalitis is a new disease. It is quite reasonable to suppose that it occurred in past centuries, though probably in small localised outbreaks which did not easily pass through the international barriers which modern conditions of life have been breaking down. At the same time one must remember the immense advances which have taken place in medical knowledge as a direct result of the war. Trench fever, for instance, became known in this way, and caused a great amount of invalidism with wastage of army strength. Now it seems almost to have disappeared. One is tempted to speculate on the possibility of the war having had something to do also with the appearance of lethargic encephalitis.[4] Levaditi and Harvier found that after seven passages in the rabbit—*i.e.*, after inoculation into seven rabbits in succession, one from the other—the virus became pathogenic for monkeys. It is conceivable that under war conditions a previously harmless organism, living in human nasal passages in the city of Vienna, acquired pathogenic properties, at first for a very occasional human being, and thereafter, by passage through a succession of other human beings, became more definitely pathogenic for man.

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* Hexamine in large doses may cause great irritability of the bladder and incontinence, and may also cause hæmaturia.

REFERENCES.

[1] *British Medical Journal*, 6th July, 1918, pp. 8, 9.

[2] *Lancet*, 13th July, 1918 ; *Glasgow Medical Journal*, August, 1918.

[3] *Glasgow Medical Journal*, October, 1918, pp. 193 *et seq.*

[4] *British Medical Journal*, 24th April, 1920, epitome 455.

INFECTIVITY IN ACQUIRED SYPHILIS, WITH SPECIAL REFERENCE TO THE WASSERMANN REACTION: THE BEARING ON ADMINISTRATIVE CONTROL OF TREATMENT.*

By C. H. BROWNING, M.D.,
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One of the most far-reaching problems concerning a case of syphilis is that of infectivity. It is of the highest practical importance to be able to determine whether or not a particular patient is liable to transmit the disease. The high infectivity of the secretions from the primary sore and from ulcerated early (secondary) lesions had, of course, been recognised at a date which long preceded accurate knowledge regarding the nature of the virus. The gradual extinction of infectivity with the course of time and treatment was also known, but the regularity of this process has probably been exaggerated, and many physicians have had experience of syphilis in the wives and children of men who had been assured that they were free from danger of transmitting the disease by able exponents of the practice of treatment by mercurial pills. Even where the birth of apparently healthy children occurred, we now know that, at least, a proportion of these were really syphilitic. As Findlay[1] has said—"If there is one striking feature in the life-history of congenital syphilis, it is the erratic manner, both as regards incidence and virulence, in which it appears in the several members of the family of two individuals, whether one or both are syphilitic." Accordingly, the investigation of the problem of infectivity requires the most exact procedures before one can feel justified in drawing general practical conclusions as a basis for therapeutic and administrative action.

The recognition of spirochæta pallida by microscopic examination and the transmission of the infection to rabbits by intratesticular inoculation are methods of precision for detecting the causal agent. The latter is of great value for the discovery of the organisms when they are present initially in scanty numbers; but it gives results only slowly, since the lesions, which when developed contain abundant spirochætes, may not become marked for six weeks or longer. Further, the Wassermann reaction yielded by the blood serum is the most delicate sign so far available of generalised activity of the syphilitic spirochætes. It is necessary therefore to inquire to what extent these refined methods of examination may yield information as to the existence of infectivity in any given case of syphilis. At the same time it must be borne in mind that, on account of the rapidity with which results are obtained, the Wassermann reaction is the only one of the three procedures already mentioned which is practicable for clinical purposes after the patient has passed beyond the stage of active secondary lesions, and, therefore, it is of the first importance to determine what relationship, if any, exists between a positive reaction and infectivity in the light of other investigations.

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* Read at a meeting of the Royal Medico-Chirurgical Society held on 23rd January, 1920.

The question is especially urgent in the so-called latent stages, in which ordinary clinical manifestations are absent or else so slight or equivocal that they may appear suspicious only to a highly trained observer, or where, in the absence of the history of the case, no evidence of syphilis may be obtainable.

Early latent cases.—The infectivity of cases in the early latent period has been well established clinically; but some observers have been unwilling to concede that in syphilis a "carrier" stage might exist in which, even in the absence of gross local lesions, such as mucous patches, spirochætes were present in the secretions, thus rendering the affected individual infective. The transmission of infection, *e.g.*, to rabbits by intratesticular inoculation has, however, demonstrated the infectivity of the blood and secretions in such cases. Thus, the blood and also the milk of an apparently healthy mother of a congenital syphilitic child, her only sign of infection being a positive Wassermann reaction, have been found infective (Uhlenhuth and Mulzer). Frühwald also has produced infections in rabbits by intratesticular injections of blood (2 c.c.) in three cases which presented no clinical signs of infection. In two of these the infection was 1 and 1½ years old, and there had been no treatment for eight or ten months; in both the Wassermann reaction was positive, however. The third case is especially interesting because the Wassermann reaction was negative at the time when the blood was proved to be infective.

The history was as follows:—The patient was a prostitute.

22nd June, 1914.—Primary sore; 4 doses of 0·75 gram. neosalvarsan intravenously and 20 intramuscular injections of mercury given.

18th July.—Dismissed from hospital with no signs of infection.

29th September to 26th October.—In hospital with jaundice; Wassermann reaction negative.

5th December.—Wassermann reaction negative.

9th February, 1915.—Wassermann reaction positive.

19th February.—Wassermann reaction negative; blood injected into rabbits, which developed chancres.

19th March.—Admitted to hospital with gonorrhœa, soft sores, and labial papule: spirochæta pallida was found in secretion from the latter by dark ground examination.

It is clear that the infectivity of such latent cases is likely to be less serious practically than that of patients in which there are ulcerated lesions on whose surfaces abundant parasites are present. Nevertheless, the infectivity of the latent syphilitic, especially within the first few years after infection, may be a serious factor, and, of course, when relapses occur spirochætes are abundant in the lesions.

Further evidence as to the persistence of spirochætes has been afforded by inoculation experiments with tissues excised from the site of healed chancres. The results have shown that spirochætes remain latent, but virulent, for considerable periods at the site of a healed chancre. Thus Sandmann has infected monkeys by means of such tissue removed up to fourteen months after healing; the material was taken from cases which were free from clinical signs or symptoms, and which had undergone vigorous mercurial treatment both general and local. Observations of this kind, together with the well-known tendency for the site of the chancre to exhibit reinduration, afford an important reason for excision of the primary sore where possible, since, if left, it will afford a nidus from which infection may reinvade the body later on.

Coming now to the question of the assistance afforded by the Wassermann test in cases at this period, it is found that a considerable proportion (from 25 to 50 per cent) yield a positive reaction in the absence of other signs of the disease. Accordingly, the test is an invaluable means for the detection of early syphilitics who, in the absence of a history, could not be otherwise discovered, and who, at this stage, must all be regarded as dangerously infective. On the other hand, a negative Wassermann reaction in the early latent period (up to four to six years after infection on the average), while affording evidence that there is not generalised activity of the infection *at the time*, cannot be taken as proof that the infection will not relapse subsequently. Should an early relapse occur, the case will again become actively infective. Accordingly, a negative reaction at this period cannot be regarded as a guarantee of permanent reduction of infectivity to the limit of safety. But it may be assumed, with a very considerable degree of certainty, that vigorous initial treatment, followed by milder continuous treatment, which suffices to prevent clinical manifestations, and maintains a negative Wassermann reaction, will depress infectivity to a negligible level.

Late syphilis.—Proceeding now to a consideration of the later stages of the disease, it is found that with the ageing of the infection profuse lesions containing abundant organisms become replaced by isolated ones in which spirochætes are extremely scanty. This restriction in number and distribution of the organisms must be ascribed to an immunity reaction on the part of the body; it takes place both in untreated cases and in those subjected to the influence of mercury (which seems only very rarely to have produced complete cure in the sense of sterilising the tissues). The fact that the later lesions may be so much more massive than those of the early period is to be accounted for by the change in the mode of reaction which occurs in the course of the infection, and to which the term allergy has been applied. Thus, where immunity breaks down locally, giving rise to a so-called tertiary process, the increased response of the tissues leads to a relatively large lesion. The diminution in number of the parasites in long-standing infections, even in the gummatous tissue itself, is to be regarded as the principal cause of the decreased infectivity of old syphilitics. Although the individual can never strictly be considered as non-infective so long as he harbours the living virus, still it is generally believed that the infectivity of such patients is reduced to the vanishing point. While this is common experience, however, it is by no means an invariable rule, and the exceptions are sufficiently numerous to merit serious attention. It cannot be regarded as satisfactory to presume that the syphilitic whose primary infection dates back four years or more, and who has undergone an arbitrary course of treatment, is non-infective when, taking a concrete figure for the sake of argument, let us say, ten out of every hundred such cases are infective. The physician in this matter cannot be content with *statistical* truth, but must endeavour, as far as knowledge will permit, to arrive at a conclusion regarding the state of the *individual.*

In this connection Trinchese has recorded six cases of wives infected by their husbands, whose primary infections dated back three to six years before marriage, and all of whom had been treated with mercury either alone or together with salvarsan. At the time of marriage all the men reacted positively to the Wassermann test, but were otherwise free from evidence of syphilis. The wives immediately after marriage reacted negatively, but five of them later on reacted positively, and four of them bore syphilitic children. Even at a very late period of clinical latency infection may still be transmitted. Thus, a man acquired syphilis at 25 years of age, and was treated by mercurial injections. There resulted rapid disappearance of all symptoms except slight swelling of the inguinal glands. Eight years after infection the serum gave a marked positive reaction, hence a course of mercurial inunctions was administered before marriage. Eleven months after marriage a healthy child was born, and both it and the mother reacted negatively; there were also no symptoms suggesting syphilis. Two years later there was a second healthy child, and both mother and child gave a negative reaction. Ten months after the birth of the second child the mother presented a typical roseolar rash, and the Wassermann reaction was markedly positive; the husband showed nothing but a strong positive reaction. Trinchese concludes, therefore, that a period of infectivity may supervene after a long non-infective stage.

The Wassermann reaction in these late cases may be obstinately positive in spite of treatment, and yet the patient may be practically incapable of transmitting the disease; hence there is not at this period the same intimate association between a positive result and the existence of infectivity as at the early stage. Nevertheless, in view of the evidence quoted above as to transmission of the disease by old cases, the judicious attitude would be to regard the patient as infective until he had been subjected to anti-syphilitic treatment, which should be vigorous to begin with, and should be continued at least so long as the reaction remained positive. Such a procedure is, of course, desirable in the individual interest of the patient as well, and there is every reason to anticipate that the initial vigorous treatment will reduce infectivity to the margin of safety, and that continued mild treatment will maintain it at this level, so that the patient will be safe practically, even should his blood continue to give a positive reaction.

What has been written above refers chiefly to syphilitic infection apart from pregnancy. As regards pregnancy, women who have been syphilised should be regarded as *permanently* liable to produce congenital syphilitic offspring unless they are subjected to vigorous treatment during, as well as before, pregnancy.

It may be noted incidentally that the above considerations, although purely practical, being directed toward the reduction of infectivity, and not aiming at a scheme for complete cure of the disease, represent a much higher therapeutic and administrative ideal than the present publicly organised treatment of syphilis seems to have been able so far to achieve. Thus it has been the experience of at least one "treatment centre" that the patients in general withdrew themselves from observation before the Wassermann tests had indicated that even a presumptively sufficient amount of treatment had been received. It is difficult to see how this result can be improved upon until there are compulsory powers to enforce continuance of each case under therapeutic supervision.

Conclusions.—As regards *the significance of a positive Wassermann reaction* in general, it can safely be asserted that a positive result always means that the syphilitic virus is still alive, and therefore that the patient is liable to suffer further effects of the disease whether or not he is capable of transmitting it to others. This is an indication for further treatment. As the test may afford the only unequivocal evidence of syphilis, it should be applied to every case irrespective of the symptoms which claim attention at the moment. Thus the examination of the patient's blood ought to constitute a hospital routine carried out as regularly as the recording of various details, such as his "social state." The information gained would be of the most valuable kind, since the existence of active untreated syphilis can in no instance be contemplated with equanimity either by the physician, the public health authority, or the economic agents of the State.

As regards *infectivity*, all cases in the earlier stages of the disease must be considered either to be actively infective or liable to become so should a relapse occur; hence a positive reaction, which may be the only evidence of the disease at the time, is of the greatest value, inasmuch as it leads to the detection of such individuals, who must then be vigorously treated. But in a known case a negative reaction at this period, in view of the dangers of relapse, cannot be taken as evidence of the permanent abolition of infectivity. It is highly probable, however, that continued treatment (with a continued negative reaction and absence of lesions) will keep infectivity in a state of suppression.* In any case where there is opportunity for transmission of the disease continued treatment, following on vigorous initial treatment, should therefore be maintained. In the later stages of the disease infectivity frequently sinks to so low a level that the patient is, for practical purposes, non-infective. But at this period there is a heightened response on the part of the tissues to the scanty parasites present; hence there is frequently a positive Wassermann reaction. Such a result, while not in itself evidence of infectivity which is practically serious, cannot be neglected, since a proportion of syphilitics may transmit the disease many years after acquiring the infection. A positive result obtained in a long-standing case, which has not recently undergone treatment, should be taken as an indication for specific treatment prior to risking transmission. Should the reaction remain persistently positive there is, nevertheless, good ground for believing that infectivity will be held in abeyance by treatment, especially if mild continued treatment follows on a vigorous initial course. The great danger of syphilis incurred by the fœtus of a woman who has been syphilised at any time previously demands vigorous antenatal treatment in addition to any treatment given before pregnancy.

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* The performance of the Wassermann test at first at monthly intervals, and later at intervals of three to six months, should be aimed at.

The above affords a clear-cut scheme for administrative procedure, which is certainly not excessive if the disease is to be thoroughly dealt with. Without powers to enforce attendance for treatment it is probably impossible to carry out such a scheme satisfactorily.

REFERENCE.

[1] Findlay, *Syphilis in Childhood*, London, 1919.

THE SURGICAL SERVICE OF THE SALONIKA ARMY.*

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IN many respects the circumstances of the Macedonian front were unlike those of any other. The smallness of the army—at no time were there more than six divisions, in the latter half of the campaign only four, and at all times these divisions were very considerably below strength—the distance from home, and the infrequency of leave, resulted in a greater degree of compactness, perhaps even greater friendliness, among units than was possible in some of the other armies. Salonika was the only town; it was the base, and through it had to pass, however quickly or leisurely, every individual on his way up country or home; and, wounded or sick, he had ultimately to find his way into a hospital on the outskirts of that irridescent but insanitary Eastern city. A constant stream of men backwards and forwards bore along with it the latest gossip about Mackensen's approaching descent from the north, the visits of Richthofen's "Circus," the newest juggling in the quinine-malaria game, the up-country pantomimes, and the rival base pierrot-troupes, not to mention the interchanges of Vardar-wind cursing and leave grousing. Dysentery and malaria were new and unlovely bonds of union and sympathy, and the mental gyrations provoked by the "Y" scheme brought all sorts of M.Os. together in the effort to keep the force in being on the one hand, and on the other to safeguard the health, present and future, of the soldiers. These diseases presented new difficulties and interests to surgery, occupying many people when fighting was less active. For fighting there always was. Raids and minor attacks were of daily occurrence in one or other part of the 90 miles line, and there were at least four quite big battles fought in the attempt to break through the crucial sector of the Bulgarian defences at the "Pip" Ridge and the Grand Couronné. These engagements provided ample surgical work for the whole command at the time they were fought and for weeks after. Then, the physicians had to become surgeons, and they in turn, in the malaria season from the middle of June onwards, and still more in the influenza outbreak of the autumn of 1918, had to work as physicians.

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* Read at a meeting of the Royal Medico-Chirurgical Society, held on 23rd January, 1920.

Then, again, the army was always more or less in liaison with the armies of the Allied Nations, and although the relations with Serbian, Russian, and Italian forces were not in a military sense intimate, those with the French and the Greeks were. There was, in consequence, a very free social mingling of medical officers of all the nations, and especially between our own and the Serbians and French. The International Surgical Society, which met fortnightly in one of the French hospitals, gave British medical officers excellent opportunities of meeting colleagues of the Allied Nations, and of seeing the methods of war surgery carried out by other hands.

The British Government is understood to have undertaken to supply some of the medical needs of the revivified Serbian army after its return from Corfu. This aid extended to 7,000 beds distributed amongst four General Hospitals (Nos. 36, 37, 38, and 41) and one Stationary Hospital (No. 33). The administrative position of these hospitals was difficult: the patients were Serbian soldiers only, the staff and rations were British, and the control, transport, and disposition of patients were in French hands. Two of these hospitals (Nos. 36 and 37) were placed at Vertekop, near the borders of Serbia, on the Monastir Road, and their situation, about 30 miles behind the line, permitted almost all the surgical work of the Serbian army, not overtaken by French, to pass through their hands.

No. 38 General Hospital was stationed 3 miles south of Salonika, and was the hospital farthest from the Serbian lines. As a result, this hospital, whose specialist staff had been drawn from Nos. 3 and 4 Scottish General Hospitals, was rather starved in a surgical sense, and received very few war wounds of importance.

Nos. 36 and 37 were badly situated on either side of the main railway line to Monastir, and suffered severely from frequent air raids. They suffered also from the fact that the French trains coming down from the front made a halt almost within the hospital compound, and the soldiers in these trains—poilus and Senegalese—made no very diligent search for latrines (probably in any case fruitless), but accommodated themselves along the line. One day in the dysentery season the sanitary officer counted, after the train had gone, 62 "pats," in five or six of which he observed blood and mucus. Needless to say, the origin of a dysentery outbreak was thus directly traced. The French sanitary officers wrote most beautiful articles in medical journals, and knew probably as well as any what was required to combat the dangers of insanitation, but it is to be feared the military authorities gave them no support. At anyrate, the French army went its own way in these matters.

Photo. by*] [*Capt. Carden.

Grand Couronne and Jumeaux Ravine, the chief Bulgarian position
(viewed from British front line).

The treatment of wounds.—The mountainous character of the country on the borders of Macedonia and Serbia made transport a matter of great difficulty. The wounded were brought from the trenches to the Field Ambulance Main Dressing Station, distances varying from 1 to 3 miles, only by night, as all roads were visible from elevated Bulgar observation posts. From the Field Ambulance to the Casualty Clearing Station the distances varied from 1½ to 8 miles, and the roads, though well within shell range, were not often dangerous. The average time elapsing between wounding and operative treatment was well over twelve hours, and, after the big engagements around the "Pip" Ridge and Grand Couronné, forty-eight hours was no uncommon interval. In spite of well organised team systems in C.C.S. the rush of wounded could not always be coped with. The military authorities would not permit any alteration in the static C.C.S. arrangements which prevailed throughout nearly three years, and the grouping of C.C.S. well known in France was impossible, the three C.C.S. available remaining scattered at distances of 5 to 10 miles from one another. The result was that in the first instance sepsis was established and shock was advanced, and in the second instance very many cases went down to the Base Hospitals at Salonika by hospital train without having been operated on in C.C.S., the Base Hospitals being thus called upon to do C.C.S. work.

28th Casualty Clearing Station, Karasouli. River Vardar in distance.

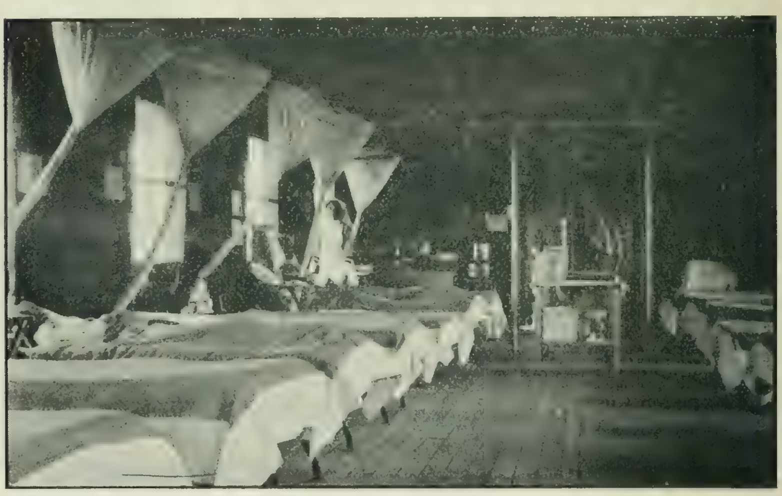
One had a personal experience of this in No. 28 General Hospital after the final battles of 18th and 19th September, 1918. This hospital was placed at the railway terminus, and the most severe cases were removed into it at once. On this occasion it was found necessary to organise an augmented surgical staff into six operating teams, working three tables in two periods of twelve hours each. Each team consisted of a surgeon, an assistant, an anæsthetist, with nursing sister and orderlies. The operating theatre was kept continuously occupied for ten days, night and day, before the urgent cases were all disposed of. The fighting in these battles was exceedingly fierce, if one may judge from the fact that five Lieutenant-Colonels were wounded and in hospital at one time, and other two, at least, were killed.

The smallness of the army permitted the consulting surgeons to visit regularly every unit, and to know personally every surgeon-specialist, while the adoption of one chosen method of wound treatment could be enforced. Free complete excision of wounds and instillation with Carrel-Dakin fluid or eusol (the latter was perhaps generally preferred as it was more easily prepared and more stable) at the C.C.S. was followed in due course by secondary suture checked by bacteriological count at the Base Hospital. Primary suture and delayed primary suture were frequently done in the later months of the campaign, with a large percentage of successes.

28th Casualty Clearing Station. Double roofed operating theatre protected by sandbag wall.

Gas gangrene occurred in limited numbers of cases. Bacteriological observations, made in the mobile laboratory attached to No. 28 C.C.S., showed that gas-producing organisms were almost invariably present in wounds, in the foreign body extracted, and in the mud-ingrained clothing of the men. These organisms could not be found three or four days after excision and institution of Carrel-Dakin treatment.

The opinion of all the surgeons as to Carrel treatment was uniformly in praise of this method. No other gave such good results, provided it was efficiently carried out. It was first instituted in C.C.S. in the spring of 1917, and failures came only because the excision was more limited than it ought to have been. But these limitations in success disappeared as one became a little more courageous and saw the actual necessity for greater freedom. The instillation of eusol or Carrel-Dakin fluid was carried out on the ambulance trains twice hourly on the way to the Base. The condition of the wounds on arrival at the Base was a sure indication of the thoroughness, or otherwise, of the treatment on the way down. The Carrel method of treating wounds was employed in the Veterinary Hospitals. Few sights were more interesting than a group of complacent shell-wounded horses and mules, with a great mass of cotton wool fixed with glue over a wound and the ends of some Carrel tubes projecting from it, connected up to a reservoir of hypochlorite of soda solution.



28th Casualty Clearing Station. Ward for serious cases (mosquito nets out of use during day).

It is impossible to detail the kinds of cases which proved most worrying. These were the same as in every other field of the war. Infected knee-joints were perhaps the most harassing. Everything depended on the character of the missile and the amount of bone damage. Before the installation of x-ray apparatus at each C.C.S. the extent of exploration of the joint was bound to be limited, and many a knee which went down to the Base nicely immobilised on a Thomas's splint and apparently clean arrived in an infected condition. The method of the Belgian surgeon, Willems, who suggested that infected knee-joints should be treated as he treated hæmarthrosis by daily active movement, several movements from full extension to acute flexion under the eye of the surgeon and walking exercise in the ward, proved to be a disastrous failure, not in our hands only in No. 28 General Hospital, but also in the hands of a distinguished French surgeon, M. Cotte, of Lyons, in No. 12 French General Hospital.

28th Casualty Clearing Station. Operating theatre and staff.

Ample provision was made for the emergency of primary hæmorrhage at Field Ambulances by supplying quantities of Bayliss's 6 per cent solution of gum arabic sent up from the Base Medical Stores in bottles, sterile, ready for use. This fluid was freely employed in C.C.S. and General Hospitals, but the results were greatly below expectation and not at all in accordance with the glowing reports received from France. Direct blood transfusion was unfortunately not employed to the extent reported in France. The difficulty lay not in technique suggested (Cabot's vein to vein by means of paraffin-lined vessels), nor in the supply of these specially made vessels, for the writer, at the instance of the senior consulting surgeon, Colonel Kelly, C.B., had these vessels made by an expert glass blower and lined with hard paraffin and sterilised by himself and supplied to each C.C.S. But the supply of healthy malaria-free donors was greatly limited, and when pressure came too often the donors previously selected by hæmolysis tests were not available, and the golden moment was lost. One thinks now that it would have been better to have taken any volunteer obtainable at the time and trusted that hæmolysis would not result nor malarial infection be transmitted. So far as can be gathered from French war literature, their surgeons did not take any precautions at all in providing against blood incompatibility.

Malaria.—The surgical conditions arising in connection with the sickness prevalent in the army of Salonika were not many. Malaria accounted for the greatest proportion of the sick. In October, 1917, a conference of commanding officers and officers in charge of Divisions was called by the D.M.S., and the statement was made that at that time there were 20,000 sick and 500 wounded in hospital. That proportion was probably quite truly representative of the campaign as a whole. In the summer of 1916—one of the hottest in the records of the country—there were nearly 30,000 admissions to hospital with malaria, and, later, the whole resources of the eighteen General Hospitals and five Stationary Hospitals working as General Hospitals were taxed to their utmost.

The profound anæmias met with in malaria provided opportunities for transfusion of blood. Of this, one's own experience was very limited. In one case the red corpuscles were as low as 600,000 per c.mm.; after two transfusions, the first of 17 oz. and the second of 21 oz., at an interval of ten days a good recovery resulted. The technique followed was that of Cabot direct from vein to vein by means of vessels lined with a layer of hard paraffin, two surgeons operating—one for the donor and one for the recipient. Special donors were selected by comparative blood and serum tests, the volunteers being sorted out according to Moss's classification. The second case was that of a young Serbian lad, under the care of Madame Hirschfeld, M.O., working in the Prince Alexander's Hospital, whose red cells were represented to be below 500,000 per c.mm. The first transfusion consisted of 15 c.c. citrated blood given by Major Hirschfeld, director of bacteriology in the Royal Serbian army, who was discovered to be an universal donor. Some days later a second transfusion was made with blood from a nursing sister in the hospital, a lady closely related to the Montenegrin Royal House. This acted like a "*coup de fouet*," the temperature rising to 105° F., but the ultimate result was good. Major Hirschfeld's opinion was that good results were obtainable in these cases from the transfusion of small quantities of blood, that large amounts were unnecessary, as the introduction of a small quantity, 3 oz., was effective in limiting or stopping the blood-destroying influence of the parasite.

Mule-drawn ambulance waggon.

Abscesses following intramuscular injections of quinine were common. At first they were attributed to careless technique, and a G.R.O. commanded that all abscesses and nerve lesions be reported to D.M.S., threatening the operators with various dreadful penalties. But these abscesses were found to be generally sterile, and due to very considerable necrosis of tissue around the injected fluid. Colonel Dudgeon had shown experimentally that a zone of necrotic tissue was the first consequence of such an injection. Various grave lesions followed these injections, such as paralysis of peripheral nerves at the site of injection, and large hæmorrhages. On one occasion the writer had to make a hurried journey to a distant C.C.S., where a serious secondary hæmorrhage from a gluteal artery required ligature of the internal iliac, the ulceration of the vessel having resulted from an infected quinine abscess.

The persistence of multiple dense painful fibrotic masses at the site of injections was very common, and prevented many a man sitting comfortably for weeks.

Rupture of the spleen was a not infrequent occurrence in up-country stations among the Macedonian labourers. No case fell to the lot of the writer. It was observed that successful splenectomy was invariably the reward of rapid operating. One surgeon specialist lost only one case in 9, and he was known to belong to that class of worker. Another surgeon specialist lost 5 out of 6 cases, and it was common knowledge that he was a slow operator. The latter officer scored, however, in another branch of war surgery—the thorough excision of shell-wounds —and had some remarkable results in primary suture, in compound fractures, and large lacerated wounds.

Intercurrent malarial attacks were common during the course of healing of wounds. But these did not seem to interfere with the healing process, though one cannot but believe that the blood of a chronic malarial patient would be less productive of antibodies than that of a healthy individual.

Perinephric abscess.—A series of 35 cases of perinephric abscess was collected by Lieut.-Colonel H. A. T. Fairbank and the writer. It was not known whether this condition had been met with in other armies, though the probability was in favour of its occurrence. The abscesses did not belong to any of the usual text-book categories. They were characterised by obscure symptoms, at first variously diagnosed as belonging to the typhoid group, or malaria, or phthisis. After a time, weeks usually, localising signs made the diagnosis clear; pain and tenderness in the loin, fulness and muscular rigidity in the renal region, vague shadow exhibited in an *x*-ray picture with obscuring of the psoas lines. Leucocytosis was invariably present ranging from 12,000 to 45,000. Pus was generally present in the urine in small amount. The organism grown from the urine and in two instances from the blood was staphylococcus aureus. This organism was always found in the pus on operation. Some of the abscesses were large and operation was easy; others were very small and difficult to locate. Healing took place rapidly. The etiology was not apparently uniform; some cases gave a rather equivocal history of boils at various times antecedent to the illness; others described blows or bruises of the loin; not all had suffered from malaria or dysentery. The pathology was obscure. The fact that the organism was a staphylococcus indicated the skin as the primary source of infection, though why the perinephric tissues—and more often the left than the right—should be selected for the location of the abscess was inexplicable.

Mule litter. Patient in Fowler position.

Three examples of anaphylaxis.—These three cases, one of them fatal, were associated with the prophylactic doses of anti-tetanic serum administered to every wounded man. The first was an artillery officer suffering from compound fracture of the femur, who had an intercurrent attack of dysentery. Anti-dysenteric serum (40 c.c.) was given subcutaneously on the third day after the fourth weekly dose of 500 units of anti-tetanic serum. Within a very few minutes the patient was profoundly collapsed, with deep maroon colour of face and neck and shoulders (this area was just becoming pale after an urticarial rash following the third injection of anti-tetanic serum), violent attempts at gaseous eructations with gaspings as if for air, pulse at first weak and slow, then in 15 minutes rapid, soft and feeble, cold extremities, sense of impending dissolution. Alcoholic stimulation, heat and pituitrin subcutaneously were rapidly effective, especially the last. In three-quarters of an hour he was greatly better, and in two hours almost well again, though exhausted and excited.

The second was a private soldier who received 60 c.c. anti-dysenteric serum a year after a prophylactic dose of anti-tetanic serum. His symptoms were similar to the other, with, in addition, the escape of a large quantity of frothy mucus from the bronchial tubes—sufficient to produce partial suffocation; this had to be assisted by artificial respiration with the patient in prone position. An urticarial rash was uniformly distributed over the body. The pulse was very thin, rapid and feeble. The administration of alcohol, heat, oxygen, and adrenalin intravenously were of service. A good and rapid recovery resulted. Seen by the writer an hour and a half after the onset of these symptoms, he was still exhausted, pulse was rapid, face was flushed, but he said he felt well.

The third case was communicated and not observed directly. It concerned an officer who had received an abrasion of elbow from a fall from a motor bicycle, and about two hours later 500 units anti-tetanic serum were given hypodermically. In a few minutes he complained of great weakness, air hunger, and had a weak, rapid pulse, deep cyanosis, rapid respiration with quickly following loss of consciousness. Oxygen, artificial respiration, strychnine, digitalis, and pituitary extract were unavailing, and he died thirty-five minutes after receiving the injection. The *post-mortem* examination showed — "Deep cyanosis of head and neck; *post-mortem* hypostasis, heart distended with fluid blood, no clotting of blood anywhere, thymus large, viscera engorged, no other changes."

The Salonika Medical Society, at one of its meetings, indulged in a debate on "The Bogey of Anaphylaxis," the result of which was to leave M.Os. in no doubt that though isolated cases of anaphylaxis were sure to occur, the routine administration of anti-tetanic serum must be continued. The Salonika army was possibly specially exposed to this risk, as many of the wounded who had had anti-tetanic serum came to suffer from dysentery, for which administration of large doses of serum was the recognised treatment. The administration of anti-tetanic serum was meticulously carried out whatever happened to a wounded man: and whatever unit he passed through, prophylactic anti-tetanic serum was never known to have been omitted. The beneficent result was plain. In the several thousands of wounded in the British army which came within the purview of the writer, only 2 cases of tetanus were known. These both recovered under the treatment recommended in the War Office Memorandum on Tetanus.

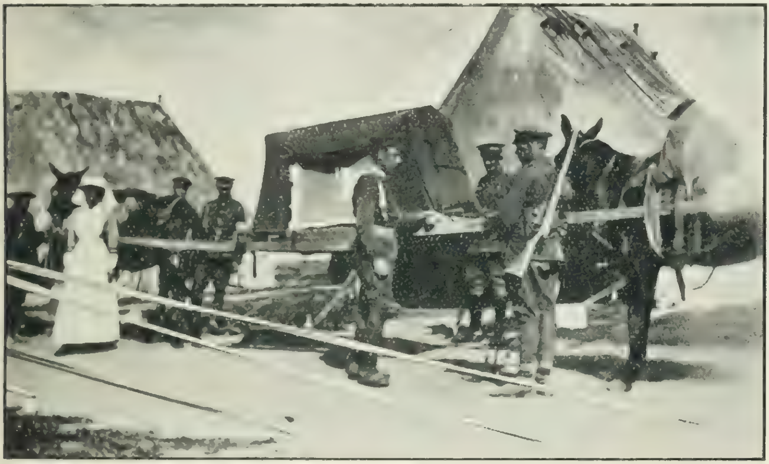


Photo. by] [*Capt. Bakewell.*

Mule litter with protection against sun and flies.

Dysentery.—It was of importance to be always on the alert for abscess of the liver. The number of cases seen by any one surgeon working in Base Hospitals was few, and consequently interpretation of symptoms sometimes went astray. The writer, in one case, mistook acute cholecystitis for liver abscess, and in another the reverse mistake was made.

In addition to the signs and symptoms generally recognised, one found that commonly the patient experienced a considerable amount of pain in the hepatic area, especially in the right lobe, when he turned even slowly on his left side. In no case seen was there any definite lump or swelling, and most of the cases were operated on by opening the abdomen with the intention of searching the liver directly, the indications for operation being supplied by the history, pyrexia, pain, and occasional tenderness. But the history was not always unequivocal. One patient who had an abscess on the upper side of the right lobe, palpable only after opening the abdomen, stoutly asserted that he never had had dysentery. Another case presented serious difficulties in diagnosis in so far as his symptoms were those of an acute abdominal condition due to any of the ordinary infective causes, and though he had come from the special Dysentery Hospital his condition was not regarded as associated with liver abscess. The obscuring of the case arose from the presence of intense pain and tenderness in the region of the right twelfth rib in addition to the abdominal symptoms proper. When the upper abdomen was opened it was found that an abscess in the posterior edge of the right lobe of the liver had ruptured. This was drained from the front, and the patient made an excellent recovery. The writer is not aware of fatal consequences in any of the cases of liver abscess known to him.

An instance of the effect of multiple punctures in a case confidently diagnosed as liver abscess by a highly competent officer in charge of a medical division is worth noting. Several punctures were made, and the needle was passed into the liver substance in several directions, but pus was not discovered. Nevertheless, from that time the patient began to improve and made a sound recovery. The case may have been one of presuppurative congestive hepatitis relievable by punctures. Treatment by emetine was carried out at the same time.

Dysenteric synovitis was seen with moderate frequency, and in a Command where synovitis of the knee was exceedingly common this possible cause was always kept in mind. The writer's experience of it was limited to cases seen in consultation in the Dysentery Hospital. He has no information as to whether organisms were found in the exudation—in the joints—the only question at issue being the surgical treatment. It was found best to deal with those on the ordinary surgical principles of rest and immobilisation, and they improved concomitantly with the primary disease.

People with no accequaintance with dysentery are apt to think that work in a Dysentery Hospital must be unsavoury and unpalatable. But it was one of the remarkable features of the medical officers in charge of dysentery wards that they were keener and more enthusiastic than almost any others. One was reminded of the verve and abandon and delight in their work that are associated with first-class house surgeons. The explanation, one is disposed to believe, lies in the surpassingly excellent results of energetic skilled treatment when one saw patients literally snatched from the grave. The writer is glad to be able to put it on record that some Glasgow men stood high in the esteem of their Commanding Officers for their work in Dysentery Hospitals.

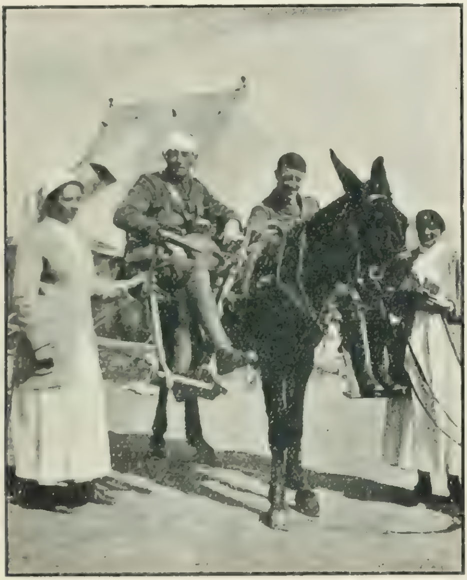


Photo. by] [*Capt. Bakewell.*

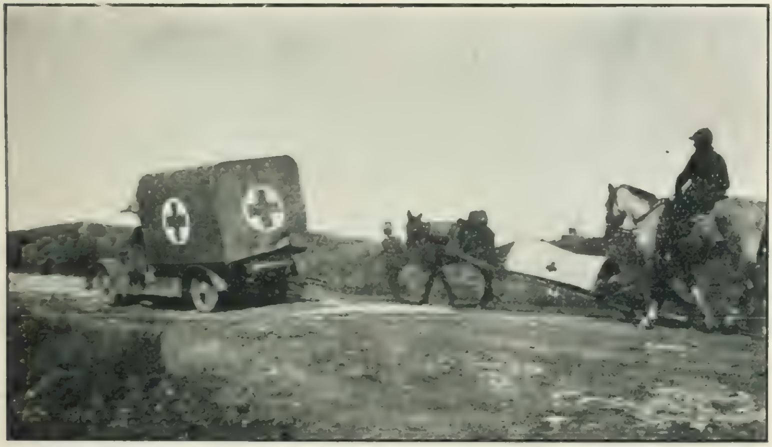
Cacolet.

After-care of wounded.—The submarine activity of the enemy in the Mediterranean in 1917 and 1918 compelled the Salonika army to be more and more self-supporting, so far, at least, as supply of men was concerned. It was practically impossible to send more men out, as all were needed in France, and delay in getting men shipped home was very great.

No. 5 Convalescent Camp was organised, therefore, for the purpose of carrying out later orthopædic work already begun in some General Hospitals, and especially in No. 29, in which the writer was in charge of the surgical division for some months. In this Convalescent Camp men received massage and exercises, were encouraged to play games, and were taught to make splints and orthopædic apparatus. To this camp were sent all men likely to be of further service to the army, though not necessarily in active fighting. The camp was officered by medical men specially selected for their enthusiasm and energy in orthopædic work, and a weekly visit was paid to it by the consulting surgeon, every man's progress being regularly watched and his treatment supervised. One has no doubt that by this scheme many men were rendered economically useful who would have drifted about from hospital to ordinary convalescent camp, then up the line and back to hospital again, putting in time till that glad day—the finish of the war—would see them sent home.

Internal derangement of the knee was very commonly seen, chiefly due to football injuries, and operation was often performed. One's recollection of operating at home for torn or displaced internal semi-lunar cartilage was that after a reasonable number of weeks a good useful joint was obtained, and the man restored to his former games and trade. But, for some unexplained reason, in the army the results were not so good—persistent synovitis, slackness of ligaments, chronic arthritis seemed far too common. It may have been that men were not too anxious to be cured, that their condition of health was lowered by frequent malaria attacks, that rheumatoid conditions were more rife, or more readily conduced to by the climate. Whatever the cause, too many of these cases were surgical disappointments.

Administration.—This very sketchy notice of a period of strenuous but altogether happy surgical work cannot be brought to a close without a reference to some of the most excellent administrative work. The transport difficulty was enormous. The ambulance trains were too few, so were motor ambulance wagons. The railways were required for Army Service Corps and artillery purposes, and the needs of the wounded were apt to be crowded out. Then, near the line, transport by travois and mule litters was costly in men and animals. If one were to try to imagine that the fighting took place in a country as mountainous as the Southern Grampians, 40 to 50 miles from the base, Salonika, and with every important road for a depth of 8 to 10 miles on our side in view of observation posts belonging to the enemy, and that the line was nearly 100 miles long, irregular, broken, with no man's land varying in breadth from 200 yards to 2 miles, some conception can be formed of transport work. Fortunately, the main roads, when the last year of the campaign had been reached, were quite good, but not till then.



Field Ambulance on the march. Mule-drawn travois.

The pleasantest possible professional association with the regular Royal Army Medical Corps was enjoyed. The writer gladly acknowledges that in all matters pertaining to the treatment of patients he was left entirely to adopt his own methods and follow his own plans.

When stationed at a Casualty Clearing Station, every encouragement was given to the writer in going forward to the front line to see how the work of Field Ambulances was carried on, and also in making visits to the Base Hospitals to investigate the progress of patients operated on in the C.C.S. The Base Medical Stores were visited regularly, and instruments or theatre equipment were readily sent up country practically for the asking. Ample support in organising the surgical work and in preparing for the work sure to follow on big engagements was always most readily given. One cannot help feeling that the credit of the efficient organisation of the medical service in the Salonika army was mainly due to the Director of Medical Services, Major-General Sir M. P. Holt, K.C.B., K.C.M.G. One could give many instances of his alertness in seeing the needs of the medical and surgical service, and of his readiness to meet both branches of his staff more than half way. A surgeon of high reputation himself, he displayed keen interest in the very rapid developments in the treatment of war wounds, and in the surgery of the liver and spleen.

Very many of the splints used in the Field Ambulances and Hospitals were made in No. 5 Convalescent Camp, while large numbers were sent to Salonika from the Splint Factory in Egypt. In the last months of the campaign the medical and surgical stores were very ample; indeed, the officer in charge of one branch of the Base Medical Stores informed the writer that, after the Bulgarian Armistice was signed, he had sufficient material to last for two years to come.

At the Base the operating theatres were in huts, and in most hospitals two theatres were provided, one for septic cases and the other for aseptic work. These theatres were, practically speaking, as well equipped and furnished as any theatre in a home civilian hospital. The same can be said for the operating theatres of the C.C.S. The writer was best acquainted with the theatre in the C.C.S. at Karasuli, and although that theatre was in a situation well within shell range, its equipment, including fly and mosquito proof netting, was as efficient as could have been desired. Operating was sometimes carried on under very difficult climatic conditions, and it was not an uncommon event for operations which were not of clamant urgency to be postponed from day to day on account of the enormous quantity of very fine dust finding its way into the theatres, blown by the Vardar-wind. This wind generally blew for three days at a time, and at the end of the wind a whole day was consumed in cleaning the theatres again.

In the later months of the war the writer found how important an event in the life of the consultants was the weekly Monday morning conference. This conference was attended by the two consulting surgeons, two consulting physicians, the consulting bacteriologist, and was presided over by the D.M.S. At these conferences all matters of policy and broad lines of treatment were thoroughly debated before being given effect to. If there appeared to be confusion in the orders as to quinine administration in malaria, or the disposal of influenza or dysentery cases, there was no want of careful enquiry and free interchange of opinion as to the best means before these orders were issued. If the medical staffs of hospitals could not comprehend administrative manipulations, why certain hospital formations were placed in one part of the Salonika area and certain others moved away, there was no doubt that all these changes had been considered minutely first, and the resultant was the best that could be done. At these conferences the merits and demerits of medical and

Photo. by] [*R. E. Kelly, C.B., F.R.C.S.*

No. 5 Convalescent Camp. Patients making splints and artificial limbs.

surgical officers in the whole command were freely discussed and thoroughly known. Vacancies were filled and promotions granted in accordance with the knowledge gained. In the first two years of the Salonika Expedition there certainly were many square pegs in round holes, but in the later period every post was filled, almost without exception, by the man best qualified to occupy it. Every officer on landing filled in a sort of autobiographical schedule. These were collected in G.H.Q., and sent round to the consultants who, with this knowledge, and the latest edition of the *Medical Directory*, selected men suitable for vacant special posts.

The writer found that the work of consulting surgeon to the Salonika army had been made very easy for him by the labours of his predecessors, Colonel Sir T. Crisp English, K.C.M.G., Colonel R. E. Kelly, C.B., and Lieut.-Colonel H. A. T. Fairbank, D.S.O. He had practically no serious problems to face. The routine work of visiting the Base and Lines of Communication Hospitals was made doubly pleasant by the knowledge that the war was rapidly approaching its close, and that the prospects of speedy return home to ordinary ways of life were perfectly bright. While the long journeys up country to Field Ambulances and Casualty Clearing Stations were, it must be confessed, magnificent joy-rides, often with friends, accomplished in a powerful staff-car amply provisioned against broken springs and punctured tyres, against even possible hunger of its occupants, they were frankly accepted as fortunate compensation for the daily plague of mosquitoes and flies, for the many weeks of hard, baked, dusty earth and hot brassy skies, and for the out-stretching slow months without home leave.

One such journey of five days stands out clear in times that were by no means monotonous. Beginning as a sudden midnight call to see a distinguished Colonel with an "appendix," in a Corps Headquarters somewhere in Bulgaria beyond the Belashitza Mountains—a great knife-edge barrier, 5,000 feet high and 20 miles long, for three years the wall guarding "the back of beyond" to our army—the journey developed, at the suggestion of Colonel Phear, C.B., consulting physician, picked up after breakdown of his car, into a kind of mission to find out the condition of our released prisoners of war, some of whom had already come down to Salonika with every evidence of evil treatment by the Bulgar. It was only two weeks after the capitulation of Bulgaria, and our troops were making the sudden swerve eastwards into Turkey. Passing due north through the famous mountain passes of Rupel, Kresna, and Djumaia, we reached Radomir to find the last party of 150 released prisoners of war in happy, though subdued humour, moderate health, and heterogenous nondescript clothing. In Sofia, later in the same day, a Bulgarian Royal car, obtained by the American Embassy, conveyed us to all the hospitals where British wounded were to be found, the first of their nation to visit them in three years.

Photo. by] [*R. E. Kelly, C.B., F.R.C.S.*

No. 5 Convalescent Camp. Patients making mud bricks.

The Bulgarian surgeons were exceedingly gracious and anxious to please. They were eager to show the orthopædic work, and especially a complete Zander outfit, a gift from the Germans, the Bulgarian share of a three-million mark fund subscribed to establish Zander apparatus in various centres; eager, too, to gain our goodwill, and to show that their treatment of our men was as good as circumstances would allow, which we found to be generally true. Far otherwise was the treatment of the old Bulgarian enemy, the Serb. In one most miserable building converted into a temporary hospital many Serbs were found starved, ill-clad, and filthy, lying on boards, with a few wisps of straw, tended by an ignorant orderly or two, and rarely visited by a doctor. In one room a soldier belonging to the Cornwalls, suffering from dysentery, was accidentally discovered; he had no notion as to how he came to be amongst Serbian prisoners. Speedy transference to a section of the Field Ambulance at Radomir placed him out of danger. The return journey to our Base was livened by passing through curious scenes of demobilisation of a peasant army; every village full of harmless-looking unarmed soldiers, every train near the capital loaded with the demobilised filling the floor of the waggons, scrambling for places on the roof, clinging with odd belongings, guitars, and sewing machines, to any buffer or bit of footboard. On the country roads the Bulgars seemed to have got hold of small hardy-looking ponies, and they rattled home merrily enough. Further to the south the ubiquitous Macedonian donkey—always overloaded—appeared again, and great troops of Macedonian families, exiled from their villages in the war area for three years, trudged along in the search for the homes they once had known.

PREVENTIVE MASTOIDOTOMY.

By GAVIN YOUNG, M.C., M.B., Ch.B., F.R.F.P.S.G.,

Extra-Dispensary Surgeon, Throat and Ear Department, Glasgow Royal Infirmary; Extra Assistant Surgeon, Ear and Throat Hospital; Hon. Rhinologist to Glasgow Eye Infirmary.

It is the aim of the writer to place before medical practitioners the benefits of early operative treatment for suppurative otitis media, both acute and chronic. It is necessary to remind the profession of the extreme disadvantages of neglect, delay, and reliance upon a system of unsupervised and desultory medication of the ear by drops or syringing.

With regard to acute otitis media, it is of first importance to check the process at the earliest possible moment. Every case of chronic otitis media started as an acute case, and ought to have been held up at the beginning. The subsidence of the acute symptoms — pain, fever, tinnitus, giddiness — should not be regarded as the signal for the medical attendant to discontinue personal supervision. A dry middle ear is the end to be desired, and this should be fought for stubbornly on the lines indicated later.

The results of long-continued suppuration in the middle ear may be written down briefly as follows:—

1. Death, or
2. Deafness, and
3. Constant ill-health.

1. One has but to attend the ear department of any big hospital in any country to meet those dire cases where the wretched patient has suffered from a discharging ear for so long that he does not realise the benefit of having two useful ears. He has endured his otitis for the most part apathetically, but occasionally stirred up by pain or increasing deafness to have treatment which, being unskilled and unsupervised, is usually futile. Suddenly intracranial complication supervenes, and the statistics of the results of operative interference in these cases

in any hospital show the folly of earlier hesitation to have the mastoid antrum drained. Let every sufferer from suppurative otitis media be regarded as potentially a sufferer from meningitis or brain abscess till the suppurative process in his middle ear has been eradicated.

2. The secret of the apathy to the deafness of otitis media lies in the gradual onset of this symptom. If a man were suddenly to acquire the deafness which ten years of otitis media have brought him, interest both on his part and on that of his friends and medical attendant would be very greatly stimulated, but because the process has been slow it loses in importance. Increasing deafness becomes the patient's lot. Fortunate is he if he has attained the second decade before he begins to lose his hearing, for by this time he has been educated to some extent in the co-ordination of ear and eye, but woe betide the child who in his first decade has suffered from otitis media so as to become almost totally deaf before he is ten! What is the prospect of this child? At the best he can be taught to lip-read, but even perfection in the art of lip-reading is no substitute for a healthy cochlear nerve. And the tragedy of it is that the deafness is avoidable.

3. In these days in which the origin of so many preventable diseases is ascribed to long-continued sepsis, no one will deny that a suppurating middle ear cleft takes a prominent place among the most important of the foci of chronic sepsis. It is one of the components of oral sepsis least to be disregarded. The constant drain on the patient's health is always shown by his pallor and in his lessened resistance to disease.

How, then, are these evils to be fought? By attaching no less importance to the suppurating middle ear than is demanded by its proximity to the brain, by the effect so often induced on the seventh and eighth cranial nerves, and by the ill-health so constantly accompanying suppurative otitis media, even when the actual focus of disease is limited to the middle-ear cleft.

A. Palliative treatment.—For the sake of convenience the palliative treatment of both acute and chronic forms may be described at once. In acute cases, if the collection of fluid in the middle ear requires outlet, the membrane should be incised.

Once the discharge is established the methods of treatment are the same in both classes. With rigorous regard to aseptic technique, the pus should be cleaned out from the meatus with cotton wool on an applicator, and the meatus filled with a spirit solution of boracic acid. The condition of the Eustachian tube should receive early attention to permit drainage from the tympanum, by inflation or irrigation through the catheter. Also, the condition of the naso-pharynx should be explored as soon as the first blaze of the acute infection has died down, and adenoids and unhealthy tonsils removed. The treatment should be carried out scrupulously for the period of, at the most, a month. If the discharge has not ceased in that time, recourse should be had to operative treatment.

I have laid down the period for palliative treatment as one month. It may be argued that three months of palliative treatment have given a dry ear in some cases, or six months—but the all-important point is that twice this period of palliative treatment may not have this happy result, and the hearing is becoming worse all the time. Therefore, unless the local signs are very favourable indeed, the period of a month should not be extended.

B. (1) *Operative treatment in acute otitis media.*—It is unnecessary to do more in this short paper than merely to point out the urgent need for operation in acute mastoiditis, with periostitis and involvement of the soft tissues. The necessity for operation is so obvious.

The line of treatment indicated by the anatomical formation of the middle-ear cleft is to expose and drain the mastoid antrum. Whether or not the antrum is involved in every case of otitis media is a point of little importance. There is no doubt at all, however, that the antrum is the back door to the middle-ear cleft through which attention can be paid to the tympanum. Two operations are at present in vogue for this stage of otitis media, viz., the cortical operation of Schwartze and the conservative mastoid operation. The former exposes the antrum, clears it of *débris*, and attempts to ablate it. By the latter operation the antrum is exposed and cleared, but drained into the meatus instead of being ablated.

The points of difference between the two operations, however, are of minor importance. Employed at the stage I have indicated, either operation may be relied upon usually to result in a dry middle ear. On behalf of the Schwartze operation it may be said that the technique is simpler in that the posterior meatal wall and cartilaginous meatus are not subjected to manipulation. The advantages of the conservative operation are that the after-treatment is less painful, that the post-aural scar is less noticeable, and that the antrum is under control for the future.

B. (2) *Chronic.*—Here again two operations are available—the radical mastoid and the conservative. The essential difference between the two is that the former makes no pretence at preserving hearing, while the latter does so. If the patient has any hearing worth the saving the indication is to give him the chance by performing the conservative operation. In my opinion the main indication in the choice of operation is the condition of the hearing in (*a*) the affected ear and (*b*) the other ear. This can be tabulated as follows:—

1. Other ear sound, conversation voice heard at more than three feet—conservative operation.
2. Other ear sound, conversation voice heard at less than three feet—radical operation.
3. Both ears diseased—modified operation, unless hearing power is negligible in operated ear.

Exceptions to this table are the instances of the presence of cholesteatoma, infection by the tubercle bacillus or Vincent's spirillum, and the presence of recurring polypi. In these cases the radical operation is indicated. It should be remembered also that the pathological conditions found in exploring the mastoid process—*e.g.*, the discovery of cholesteatoma in a supposedly acute otitis media—may affect the form the operation should take. Broadly, however, the lines of indication are as noted.

A point of considerable practical importance—the patient having been advised to undergo operation says, "Can you promise me a dry ear?" No such promise can be made for either operation. Assurance can be made, however, that the ear will probably be dry, and that the prospect of life can be prolonged in any case, even in the unhappy event of the discharge not ceasing, so long as the antrum is under control.

In conclusion, to do more than touch very lightly on the indications for the various operations on the mastoid process is outwith the scope of this article. The point of first importance is that, if the patient is to undergo operation, the earlier in the course of the disease the better for the preservation of health and hearing. The great ground for preventive mastoidotomy is the fever hospital. Scarlet fever and measles take a heavy toll of the hearing, and until the fever hospitals have skilled aurists to undertake the treatment of their cases of otitis media the problem of the attack on middle-ear suppuration is still to be solved.

CURRENT TOPICS.

Editorial Note.—The Glasgow and West of Scotland Medical Association recently held a special meeting, at which certain changes were made in the editorial staff of the *Glasgow Medical Journal.* The services of both the late Editors have been of immense value to the *Journal*, and we cannot allow their retiral to pass unacknowledged.

Mr. Edington's official connection with the *Journal* began a considerable number of years ago. During his term of office he gave most loyal and arduous service, and worked laboriously and ungrudgingly in its interests and in those of the profession in Glasgow and the West of Scotland. His absence on military duty throughout the whole length of the war prevented active participation in the editorial work, and to the unaffected regret of the Association he felt that the long, though temporary, interruption provided a suitable opportunity for him to give place to others.

Dr. Jack's services cannot be estimated too highly. In the midst of much strenuous private and military work he kept constantly up to date the lists of military appointments, casualties, and honours among medical graduates of the University and those engaged in practice in Glasgow and its neighbourhood, while at the same time he supplied original articles and reviews, and maintained the interest in current topics. His grace of diction and literary ability were assets to the *Journal* which it will be difficult to replace, while it is not too much to say that to his efforts it owed its very existence during the war.

Gifts to the Royal Faculty of Physicians and Surgeons, Glasgow.—Through the kindness of Mrs. Joseph Coats the Library of the Royal Faculty of Physicians and Surgeons has been enriched by the addition of about a dozen volumes in MS.

by the late Professor Coats. Among them are various scientific scrap-books, largely extracts from German medical literature in the 'seventies and 'eighties of last century. Of more interest are several volumes of notes of his lectures on pathology. There are also lectures and addresses delivered on special occasions. In addition to the above volumes, which all date from the time that Dr. Coats became a teacher of pathology, there are two of an earlier period. These are a volume containing Professor Gairdner's lectures on "Tubercular Disease," delivered in the summer of 1865, and a volume of records of cases in the wards of Mr. Lister in the winter of 1868-69. From a historical point of view these are of much interest.

Dr. John Patrick, on behalf of himself and his family, presented to the Faculty a bust of Dr. David Livingstone, the African Explorer and Missionary. He also presented, on behalf of Dr. John Mathie, the minute book of "The Wee Faculty," a very limited and exclusive body of which there is now no surviving member. These gifts were accepted and suitably acknowledged by the President on behalf of the Faculty. An article on the "Wee Faculty" will appear in a future issue of this *Journal.*

INCORPORATED SOCIETY OF TRAINED MASSEUSES.—Under the auspices of this Society a Club has been formed in Glasgow, with rooms at 13 Newton Place. A Registry for the supply of qualified masseuses has been instituted at this address, and applications for the services of a masseuse may now be made there. During the past winter a much appreciated series of lectures was delivered to the Society by prominent members of the medical profession in Glasgow.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS, GLASGOW.—At the monthly meeting of this Faculty the following were admitted (after examination) as Fellows:—Norman Stewart Bruce (Triple Qualification), 5 Rosebery Terrace, Glasgow; James Alphonsus Conway, M.D.Glasg., 337 Bath Street, Glasgow; John Norman Cruickshank, M.D., Ch.B.Glasg., 9 Royal Crescent, Glasgow; John Gracie, M.B., Ch.B.Glasg., 1 Park Gardens South, Partick; Stuart Spence Meighan, M.B., Ch.B., B.Sc.Glasg., 5 Rosebery Terrace, Glasgow; Joseph Hume Paterson (Triple Qualification), D.P.H., Dunedin, Bothwell Road, Hamilton; Daniel McKinlay Reid, M.D.Glasg., Hawkhead Mental Asylum, Cardonald; William Robertson Snodgrass, M.B., Ch.B., M.A., B.Sc.Glasg, 12 Roxburgh Street, Hillhead; Ian Dishart Suttie, M.B., Ch.B.Glasg., 1055 Great Western Road, Glasgow; and Gavin Young, M.B., Ch.B.Glasg., 5 Newton Place, Glasgow.

Appointments.—The following appointments have recently been made:—

Western Infirmary—Dr. William MacLennan, Honorary Consulting Physician; Dr. James Carslaw, Physician, *vice* Dr. MacLennan; Dr. Walker Downie, an Honorary Consulting Surgeon for Diseases of the Throat and Nose; Dr. W. S. Syme, Surgeon for Diseases of the Throat and Nose, *vice* Dr. Walker Downie; Dr. James R. Riddell, Medical Electrician; Dr. George A. Allan and Dr. G. Herbert Clark, Assistant Physicians; Dr. W. Sewell and Dr. Chas. Bennett, Assistant Surgeons; Dr. Douglas K. Adams and Dr. W. R. Snodgrass, Dispensary Physicians; Dr. J. G. McGregor Robertson and Dr. Matthew White, Dispensary Surgeons.

Glasgow University—Dr. W. S. Syme, Lecturer on Diseases of the Throat and Nose; Dr. James R. Riddell, Lecturer on Electrical Diagnosis and Therapeutics.

Glasgow Royal Maternity and Women's Hospital—Professor Murdoch Cameron, Dr. Robert Jardine, and Dr. A. W. Russell, Honorary Consulting Obstetric Physicians; Dr. David Shannon, Dr. Samuel Cameron, Dr. A. N. McLellan, and Dr. James H. Martin, Visiting Physicians; Dr. James H. Hendry, Dr. R. A. Lennie, Dr. John Hewitt, and Dr. Douglas M. Lindsay, Assistant Physicians; Dr. James H. Martin, Physician at the Gynæcological Dispensary.

Dr. Walter Gilmour has recently been appointed Pathologist and Bacteriologist to the District General Hospital, Auckland, New Zealand. He graduated at Glasgow University M.B., Ch.B. in 1908, and later M.D., with honours, his thesis being awarded a Bellahouston Gold Medal. Dr. Gilmour has held successively the appointments of Assistant to the Professor of

Pathology in our University, Pathologist to Gartloch Asylum, and Assistant Tuberculosis Officer in the Public Health Department, Glasgow. During the war he served with the R.A.M.C. in France and Italy. He has carried out valuable research work, and has from time to time made important contributions to medical literature.

Dr. Arch. A. Jubb, Wakefield, has been appointed a Medical Officer of the Ministry of Health, Whitehall. He graduated M.B., Ch.B. at Glasgow University in 1898, and later also took the degrees of M.D. and D.Sc. During the war Dr. Jubb was Sanitary Adviser to the Irish Command.

Obituary.

JOHN DUNLOP, M.D., F.R.F.P.S.G., V.D.,
GLASGOW.

DR. JOHN DUNLOP, who was for many years a well-known and highly esteemed practitioner in the West-End of Glasgow, died on 21st May, 1920, at his residence, 14 Berkeley Terrace. Dr. Dunlop studied medicine at Glasgow University, and graduated in 1870. Four years later he took the degree of M.D. Dr. Dunlop, from the earlier days of the Volunteer movement, was an enthusiast. Joining the ranks in 1860, he became Surgeon-Captain in 1871. He was associated particularly with the old 3rd L.R.V., but, later, for a number of years was in command of the Glasgow Brigade Bearer Company. He retired in 1898 with the rank of Surgeon-Lieutenant-Colonel.

REVIEWS.

Wheeler's Handbook of Medicine. By William R. Jack, B.Sc., M.D., F.R.F.P.S.G. Sixth Edition. Edinburgh: E. & S. Livingstone. 1920. (12s. net.)

The present edition of this well-known handbook has been thoroughly revised and brought up to date. New articles have been inserted upon Landry's paralysis, caisson disease, compression paraplegia, and myasthenia gravis. The medical diseases of the war, including trench fever, infective jaundice, war nephritis, and war neuroses, are described in a new chapter at the end of the volume. Otherwise there are few changes. The book remains the best of the smaller text-books of medicine. It is a mine of reliable information, concisely put, and well arranged.

The Feeding of Nations: A Study in Applied Physiology. By E. H. Starling, C.M.G., M.D., F.R.S. London: Longmans, Green & Co. 1919. (5s. net.)

In the present small volume Professor Starling presents the matter of his Oliver-Sharpey Lectures given at the Royal College of Physicians, London, last year. It is, indeed, a study in applied physiology on a gigantic scale. In the six short chapters which make up the book he has described in the simplest of language, and, strictly from the physiological point of view, the elementary principles which ought to guide "any measures devised to secure common action in the feeding of the peoples of Europe." Although, fortunately, much of the matter has now entered the realms of history, it is common knowledge that it will be years before we can return to the haphazard feeding of pre-war days, and it is well that we should appreciate the conditions.

It is a most interesting and instructive story which is unfolded, in which the actual requirements of the population, the provision and the distribution of the food, are dealt with in turn. The two latter sections, of course, still are of considerable importance, but the first is and always will be one of very vital importance. The actual requirements of the population for food were a most serious problem when shipping was almost a daily decreasing quantity; they still are, as we all acutely appreciate, at the bottom of almost the whole of the labour unrest. World-shortage of food means rising prices, and this is inevitably followed by demands for increased wages. Professor Starling deals most simply and clearly with the physiological problems which underlie these needs, the relation of the food requirements to sex, age, work, &c., and he follows it with a chapter of almost equally vital importance—the influence of a restricted diet on the nation. It is a most instructive and interesting volume, well written and well printed on good paper.

Diseases of the Nose and Throat. By HERBERT TILLEY, B.S.Lond., F.R.C.S.Eng. Fourth Edition. London: H. K. Lewis & Co., Limited. 1919. (25s. net.)

THE fact that this is the fourth edition of the work shows that it occupies an honourable position, and is a criterion of its success as a text-book. It thoroughly justifies its position: it is one of the best text-books in the English language. Many of the chapters in the present volume have been entirely rewritten and brought up to date. A new chapter has been added on "Operations for intra-nasal dacryocystotomy" and for the removal of "Pituitary tumours by the intra-nasal route." If one should wish to see what advances have been made in the specialty in the past few years he should compare the present volume with one of the earlier editions.

A point which should appeal to the general practitioner is the special care that has been taken with the symptomatology and treatment of the various diseases. The operative treatment and even major operations are fully described and well illustrated, so that there should be no difficulty in following the different steps in the operation.

As was to be expected from one who is an acknowledged expert in endoscopic work, the chapter on endoscopy is particularly good, and the beginner in this branch of work will find a careful study of it of immense service. The technique is well described. We note that the dorsal recumbent position is recommended, and that the author has a preference for distal illumination as used by Chevalier Jackson rather than that from the Brühning's electroscope.

The only objection we have to this chapter is that it is printed in smaller type, which candidly we do not like. We quite realise that the present volume has almost reached its limit in size, but such an important chapter, and so well written, deserves larger type. It might be of interest to the general reader to give the author's indications for endoscopic examination of the bronchi and œsophagus.

Indications for bronchoscopy: (1) When the history, symptoms, or radiographic examination render it probable that a foreign body has been inhaled; (2) the presence of tracheal or bronchial stenosis; (3) if there are signs of pulmonary consolidation (especially in base of the right lung) with those of pleural effusion, and no tubercle bacilli in the expectoration; (4) all cases of bronchiectasis should be examined for foreign bodies (the author has removed a portion of rabbit-bone from a man's right bronchus, wherein it had been impacted for three years, and produced extensive bronchiectasis of the lung—*vide Lancet*, 22nd April, 1911); (5) cases of dyspnœa not due to obvious disease of the lung; (6) every case of dyspnœa unrelieved by tracheotomy; (7) for non-tuberculous hæmoptysis; (8) cases of recurrent nerve paralysis of obscure origin; (9) when pulmonary disease of doubtful origin is present.

Indications for œsophagoscopy: Difficulties or pain in connection with the swallowing of food, such as may result from the presence of a foreign body, traction or pressure pouches, a benign or malignant growth; mediastinal growth, or that curious form of stricture of the lower end of the gullet which has been variously termed "cardiospasm," "phrenospasm," "abdominal œsophagismus," and "achalasia of the cardia." By the direct method, traumatic, corrosive, and syphilitic strictures have been diagnosed and successfully treated.

Contra-indications of œsophagoscopy: These include the presence of an aneurysm, tumours, or foreign bodies complicated by dyspnœa or by surgical emphysema and fever, a very weak or collapsed general condition of the patient and serious cardiac lesions.

This is a manual to be recommended, and the practitioner or student who adds it to his library will find it valuable for reading and reference.

Herman's Difficult Labour. Sixth Edition. Revised and Enlarged. By CARLTON OLDFIELD, M.D.Lond., F.R.C.S.Eng. London: Cassell & Co., Limited. 1920. (16s. net.)

DR. OLDFIELD is to be congratulated on the sixth edition of *Herman's Difficult Labour.* With most of his teaching we are in entire agreement. The chapters on the mechanism of labour with contracted pelvis and abnormal uterine action should be read and fully understood by all practising midwifery. The whole work is characterised by a conciseness which could well be followed by writers of medical books with saving of much time to the readers. There is no "padding," but a directness which is admirable. We, however, do not think that sufficient emphasis has been given to the dangers and difficulties of version after the liquor amnii has drained away. If the uterus is tightly contracted round the child, whether it be alive or dead, then the first consideration is the mother and decapitation should be done. To attempt version in such a case is to place the mother's life in grave jeopardy. In extracting the head after decapitation, the author's method is to extract with the cranioclast or cephalotribe. In Glasgow, the operator simply puts the head into a favourable vertex position, applies forceps and delivers, excepting those cases where there is a large head. The remarks on sterilisation after Cæsarean section meet with our entire approval; the gist of these remarks is that the patient herself has the determining voice in the decision.

Pubiotomy is condemned but we cannot share the author's enthusiasm for symphysiotomy; in our opinion neither operation should ever be performed; the risks to the mother are too many and too serious, and the end-result is always uncertain; induction or Cæsarean section is preferable.

In describing the operation of perforating the head there is a grave omission, namely, that the head must be firmly held in position by an intelligent assistant. We have great pleasure in recommending this volume to both practitioners and undergraduates.

Nature of Enzyme Action. By W. M. BAYLISS, M.A., D.Sc., F.R.S. Fourth Edition. London: Longmans, Green & Co. 1919. (7s. 6d. net.)

THIS small book is undoubtedly the best monograph on enzymes which exists in any language. The present edition has been brought completely up to date. In view of the fact that enzymes have now assumed such an important position, not only in the realm of physiology but in so many commercial processes, this excellent *résumé* of the subject, which is both authoritative and succinct, deserves continued support.

The Practitioner's Manual of Venereal Diseases. By A. C. MAGIAN, M.D. London: William Heinemann. (10s. 6d. net.)

THE preface states that this manual was written for the general practitioner only, and that it makes no pretence whatever of going into details. The keynote of the book is simplicity, and Dr. Magian, who is an experienced clinician, has produced a practical and trustworthy handbook which should well serve the purpose for which it is intended. The busy practitioner who desires in small compass a *résumé* of the modern methods of diagnosis and treatment of the venereal diseases will find it both clear and reliable.

The Venereal Problem. By E. T. BURKE, D.S.O., M.B., Ch.B. London: Henry Kimpton. 1919. (7s. 6d. net.)

THE aim of this book is to educate the public as to the nature and prevalence of venereal diseases, their effect on the national life, and the factors causing their propagation and spread.

Methods for their control and eradication are also discussed. Dr. Burke has a facile pen, and the whole subject is dealt with in a full and frank but unobjectionable manner. While some debateable points are perhaps decided too definitely for us by the author, it is nevertheless a book which we hope will have a wide circulation amongst the general public.

Venereal Disease: Its Prevention, Symptoms, and Treatment. By Hugh Wansey Bayly, M.C. London: J. & A. Churchill. 1920. (10s. 6d. net).

Mr. Wansey Bayly says that he has written this small book for the student and general practitioner who cannot devote many hours to the study of venereal disease. The author presents an excellent epitome of recent methods of diagnosing and treating syphilis and chancroid, pathological points being especially well handled. The important subject of gonorrhœa, however, is insufficiently considered, and the treatment recommended is, in great part, out of date. The author follows the London school, which has been unaccountably slow in accepting the modern scientific teaching on gonorrhœa.

Mr. Bayly writes strongly and interestingly on the prevention of venereal disease. Unfortunately, he includes segregation of patients among his recommendations, an unnecessary and impracticable proposal, which tends only to weaken what is otherwise a strong case.

Menders of the Maimed: The Anatomical and Physiological Principles underlying the Treatment of Injuries to Muscles, Nerves, Bones, and Joints. By Arthur Keith, M.D., F.R.S. London: Henry Frowde and Hodder & Stoughton. 1919. (16s. net.)

This volume is based on a score of lectures given at the Royal College of Surgeons of England in the winter 1917-1918, in which were re-stated the principles which underlie the art of orthopædic surgery. Since we can help the sick and maimed only "by aiding and abetting the natural defensive and recuperative mechanisms of the human body, our methods must be based on a knowledge of these mechanisms."

Many problems and many questions, none of them new, have arisen out of the war. The author has attempted "to provide the materials on which the right answer must be based," as regards, amongst others, such questions as the rightful place of rest, action, massage, the possibilities of grafting and transplantation, and the osteogenetic property of the periosteum. He sets about his task in a manner which he believes to be new. We are inclined to assent to this belief, as we do not recollect having ever before seen or heard of the method. Briefly, it consists in taking the reader to the hospital wards, or to the laboratories, in which the great advances of orthopædic surgery were initiated, and in introducing to him the various "'menders of the maimed' as they were in the heyday of life." The result is that we are furnished with biographical sketches of pioneer orthopædists, each in the midst of his labours; and, as in biographies in general, we are shown his relations with his contemporaries, with his predecessors, and with those who came after him. We are transported, as it were, on a magic carpet, here and there, and to and fro; and, while the journey is intensely interesting, we must confess that the number alone of the different scenes is embarrassing, and their correlation involves considerable concentration on the part of the reader. In a volume like this, packed so full of matters of interest, it is difficult to notice particular sections; but we would like to draw special attention to those dealing with muscles and tendons and with bone. The last-named occupies several chapters, and in these we are led on from bone growth to repair and reproduction, and finally to grafting, the section closing with an account of transformation. The law of transformation is put forth thus:—"Osteoblasts at all times build and unbuild, according to the stresses to which they are subjected" (p. 288).

The controversy over the osteogenetic function of the periosteum is fully described, and the difficulty in reconciling the opinions of the different schools is solved in a simple fashion. "Syme and Ollier must have removed . . . to a greater depth than did Macewen" the soft tissues which cover bone (p. 260).

We think an even simpler explanation would have been that some include in their definition of periosteum a deep layer which others hold belongs to bone.

In the section on muscles, their inseparability from the neural-arc system is emphasised (p. 115), and we are reminded that the "individual" muscle has no real existence in the living animal body. Further, evidence is led to prove that "it is not muscles, but movements, which are represented in the brain" (p. 123). The application of this to clinical work is then briefly indicated.

The subject of tendon-transplantation receives full consideration. Here the details of technique are entered into; but the surgeon is reminded that physiology has to be remembered, and that a successful result "depends on the intelligence and will-power of the patient" (p. 151).

Apart from the practical items in the book, we have delightful pictures of the giants of medicine and glimpses at their mode of living. We are thus given a combination of the history of the individuals with that of their science and art; and the result is a volume which we would not willingly part with, but would recommend all surgeons to possess themselves of.

Surgery would seem fated to be divided up into departments or specialties. Of these there is none more fascinating than orthopædics, and a volume such as Dr. Keith's is likely to increase, if possible, the fascination.

Essentials of Chemical Physiology. By W. D. HALLIBURTON, M.D., LL.D., F.R.S. Tenth Edition. London: Longmans, Green & Co. 1919. (7s. 6d. net.)

As the ninth edition of this well-known volume was only published three years ago, there has been but little change in the subject-matter. It is an excellent practical handbook, the needs of the medical student being kept well in view. It is also quite a satisfactory laboratory manual, as it contains clear descriptions of a large number of methods which are required in the course of modern research.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

EDITED BY GEORGE MACINTYRE.

MEDICINE.

The Results of Thymus Extirpation in the Dog. By E. A. Park and R. D. McClure (*American Journal of Diseases of Children*, vol. xviii, No. 5).—The authors, after describing the development and anatomy of the thymus in different animals, conclude that the dog is the most suitable animal to experiment with, because isolated lobes of thymus tissue inside and outside the thyroid are more infrequent than in any other species.

They give an exhaustive review and criticism of previous experimental work on the thymus, and show that much of the work is erroneous from such causes as bad operative technique, insufficient control experiments, and the bad hygienic conditions under which the animals, in some cases, were kept. From their survey of the literature they show that the results of thymectomy fall into three groups. In one that removal of the thymus produces no effect. In another that it produces transitory disturbances in health and development. In the third that removal of the thymus produces death with or without changes in growth and nutrition and alteration in the skeleton and organs of internal secretion.

In their own experiments the authors used puppies. Seventy-five of these had their thymuses removed at ages varying from nine days to seven weeks, all but five being under twenty-one days old. A large number were lost as a result of the operation, and others from intercurrent disease such as distemper, diarrhœa, &c. Twenty-four survived and were considered suitable for study. Controls were taken from the same litters. The animals were kept in the country in suitable kennels where they could get exercise and fresh air. Necropsies were performed on all, and careful search made for remains of thymus tissue. In only two were thymus remains discovered. The bones were examined for signs of rickets.

Although the authors embarked on the investigation with the preconceived idea that removal of the thymus would produce rickets, they were quite unable to prove this. They conclude that—

The thymus is not essential to life in the dog.

That its excision produces no detectable change in the hair, teeth, contour of the body, muscular strength, activity, or intelligence of the experimental animal.

That its extirpation probably does not influence growth or development, though the authors could not exclude the possibility that it may cause retardation in development and delayed closure of the epiphyses.

That it probably produces no alteration in the organs of internal secretion, though shortly after the operation it is possible that changes may occur in these organs, this point not being covered by the experiments.

Voluminous protocols of the experiments are given.—G. B. FLEMING.

The Role of the Antineuritic Vitamin in the Artificial Feeding of Infants. By A. L. Daniels and A. H. Byfield (*American Journal of Diseases of Children*, vol. xviii, No. 6).—The authors, accepting the view that milk only contains a very small amount of antineuritic vitamin, and after making the observation that in their clinic it was usually necessary to give babies a much more ample supply of milk than the theoretical calorific requirements demanded in order to maintain satisfactory gain in weight, added antineuritic material obtained from wheat embryo to the diet.

Their results, which are graphically shown in weight charts, demonstrate a marked increase in weight during the periods in which the antineuritic vitamin was being given.

As it was realised that it would be advantageous to utilise an easily manufactured solution of vitamin, the authors experimented with a strained vegetable soup made by boiling 227 gm. turnips, 278 gm. carrots, 170 gm. celery, with sufficient water to cover them when comminuted. By this means they obtained 500 c.c. of soup. It was found that 100 c.c. a day of this soup produced satisfactory growth.—G. B. FLEMING.

De la Carence Alimentaire chez les Enfants. Weill et Dufourt (*Archiv. de Méd. des Enfants*, Tome XXII, No. 11).—The term carence is used to designate diseases due to deficiency of a ferment which is necessary in minimal doses for the normal nutrition of the tissues. The idea of alimentary carence explains the pathology of dystrophies due to bad nutrition.

Scurvy is one of the numerous diseases which can be attributed to carence. The authors report nine cases of infantile scurvy in children recovered from the occupied parts of Northern France towards the end of the war. All the cases occurred in children between the ages of two and a half and six years—a late age for infantile scurvy to appear, but this is explained by the fact that while in the hands of the Germans fresh food was absent from their diet for long periods.

The symptoms were not altogether typical of scurvy, and it was some time before the authors grasped the true etiology of the condition. The most prominent symptoms were gingivitis and enteritis; bone lesions were practically never seen. The gums were greatly swollen, bleeding, and painful, in some cases there was severe ulceration. Three main forms of enteritis were seen—either a simple susceptibility of the gastro-intestinal tract, or watery or sometimes mucous diarrhœa, or lastly bloody diarrhœa. All the forms of diarrhœa resisted ordinary treatment. There was marked anæmia in all. Hæmorrhages, except from the gums and the intestine, only occurred in the form of epistaxis and a tendency to ecchymoses.

One child had tenderness of the legs. Rickets was common.

Ordinary treatment was of no avail, and it was only after giving oranges, lemons, and fresh green vegetables that improvement began, and this was so rapid that within a month the children were well.—G. B. FLEMING.

Books, Pamphlets, &c., Received.

Pye's Elementary Bandaging and Surgical Dressing, with Directions concerning the Immediate Treatment of Cases of Emergency : For the Use of Dressers and Nurses. Revised from H. W. Clayton-Greene's eighth edition of Pye's Surgical Handicraft, by V. Zachary Cope, B.A., M.D., M.S.Lond., F.R.C.S. Eng. Fourteenth edition. Bristol : John Wright & Sons, Limited. 1919. (3s. 6d. net.)

Minor Surgery and Bandaging (Heath, Pollard, Davies) for the Use of House Surgeons, Dressers, and Junior Practitioners. Seventeenth edition, by Gwynne Williams, M.S., F.R.C.S. With 236 illustrations. London : J. & A. Churchill. 1920. (10s. 6d. net.)

Modern Spiritism : Its Science and Religion, by A. T. Schofield, M.D. London : J. & A. Churchill. 1920. (3s. 6d. net.)

The Principles of Anatomy as seen in the Hand, by Frederic Wood Jones, D.Sc., M.B., B.S.Lond. With 2 plates and 123 text-figures. London : J. & A. Churchill. 1920. (15s. net.)

A Manual of Practical Anatomy : A Guide to the Dissection of the Human Body, by Thomas Walmsley. With a Preface by Thomas H. Bryce, M.A., M.D. In three parts. Part 1 : The Upper and Lower Limbs. London : Longmans, Green & Co. 1920. (9s. net.)

The Principles of Ante-Natal and Post-Natal Child Physiology, Pure and Applied, by W. M. Feldman, M.B., B.S.Lond. London : Longmans, Green & Co. 1920. (30s. net.)

The Radiography of the Chest. Vol. 1 : Pulmonary Tuberculosis. With 9 line diagrams and 99 radiograms, by Walker Overend, M.A., M.D.Oxon., B.Sc.Lond. London : William Heinemann (Medical Books), Limited. (17s. 6d. net.)

Modern Anæsthetics, by J. Fredk. W. Silk, M.D. Second edition. London : Edward Arnold. 1920. (7s. 6d. net.)

Electric Ionization : A Practical Introduction to its Use in Medicine and Surgery, by A. R. Friel, M.A., M.D.Dub., F.R.C.S.I. Bristol : John Wright & Sons, Limited. 1920. (Cloth, 8s. net ; Paper Covers, 6s. net.)

Alcohol and the Human Body : An Introduction to the Study of the Subject, and a Contribution to National Health, by Sir Victor Horsley, C.B., F.R.S., F.R.C.S., M.B., B.S.Lond., and Mary D. Sturge, M.D.Lond. With a Chapter by Sir Arthur Newsholme, C.B., M.D., F.R.C.P., D.P.H. ; and a Chapter written in collaboration with Sir Leonard Rogers, C.I.E., M.D., F.R.C.S. ; and a chapter written in collaboration with C. W. Saleeby, M.D., F.Z.S., F.R.S.Edin. Sixth edition, enlarged. London : Macmillan & Co., Limited. 1920. (3s. net.)

A Medical Handbook for the Use of Practitioners and Students, by R. S. Aitchison, M.D., F.R.C.P.E. With numerous illustrations. Fifth edition, thoroughly revised. London : Charles Griffin & Co., Limited. 1920. (10s. 6d.)

Essentials of Human Physiology, by D. Noel Paton, M.D., B.Sc., LL.D., F.R.S. Fifth edition, revised and enlarged. Edinburgh: W. Green & Son, Limited. 1920. (25s. net.)

The Link between the Practitioner and the Laboratory: A Guide to the Practitioner in his Relations with the Pathological Laboratory, by Cavendish Fletcher, M.B., B.S Lond., M.R.C.S., L.R.C.P., and Hugh M'Lean, B.A., B.C.Cantab, D.P.H.Camb., M.R.C.S., L.R.C.P. London: H. K. Lewis & Co., Limited. 1920. (4s. 6d. net.)

Immunity in Health: The Function of the Tonsils and other Subepithelial Lymphatic Glands in the Bodily Economy, by Kenelm H. Digby, M.B., B.S., F.R.C.S. London: Henry Frowde and Hodder & Stoughton. 1919. (8s. 6d. net.)

Cunningham's Manual of Practical Anatomy, revised and edited by Arthur Robinson. Seventh edition. Vol. I: Superior Extremity — Inferior Extremity. Vol. II: Thorax and Abdomen. With 231 illustrations, many of which are coloured. London: Henry Frowde and Hodder & Stoughton. 1920. (12s. 6d. net each volume.)

Sight-Testing Made Easy, by W. Wright Hardwicke, M.D.St. And., M.R.C.P., L.R.C.S.Ed. Fourth edition. London: J. & A. Churchill. 1920. (5s. net.)

A Manual of Venereal Diseases for Students, by L. W. Harrison, D.S.O., M.B., Ch.B., M.R.C.P.E. London: Henry Frowde and Hodder & Stoughton. 1920. (16s. net.)

Practical Hints on Minor Operations, by G. Percival Mills, F.R.C.S. Birmingham: Cornish Brothers, Limited. 1920. (5s. net.)

The Diagnosis of Nervous Diseases, by Sir James Purves Stewart, K.C.M.G., C.B., M.D.Edin., F.R.C.P. Fifth edition, revised and enlarged. London: Edward Arnold. 1920. (30s. net.)

Radiography in the Examination of the Liver, Gall Bladder, and Bile Ducts, by Robert Knox, M.D. London: William Heinemann (Medical Books), Limited. (7s. 6d. net.)

An Atlas of the Primary and Cutaneous Lesions of Acquired Syphilis in the Male, by Charles F. White, O.B.E., M.B., and W. Herbert Brown, M.D. With a Foreword by Lieut.-General Sir T. H. J. C. Goodwin, K.C.B., C.M.G., D.S.O., K.H.P. London: John Bale, Sons and Danielsson, Limited. 1920. (27s. 6d. net.)

Occupational Affections of the Skin, their Prevention and Treatment, with an Account of the Trade Processes and Agents which gave rise to them, by R. Prosser White, M.D.Edin., M.R.C.S.Lond. Second edition, with 24 plates (comprising 28 figures). London: H. K. Lewis & Co., Limited. 1920. (25s. net.)

The Coolidge Tube: Its Scientific Applications, Medical and Industrial, by H. Pilon. Authorised translation. London: Baillière, Tindall & Cox. 1920. (7s. 6d. net.)

The Sympathetic Nervous System in Disease, by W. Langdon Brown, M.A., M.D.Cantab., F.R.C.P.Lond. London: Henry Frowde and Hodder & Stoughton, Limited. 1920. (10s. 6d. net.)

GLASGOW.—METEOROLOGICAL AND VITAL STATISTICS FOR THE FOUR WEEKS ENDED 26th JUNE, 1920.

	Week ending			
	June 5.	June 12.	June 19.	June 26.
Mean temperature,	53·7°	54·4°	61·7°	56·7°
Amount of rainfall, ins.	0·36	0·03	0·51	0·12
Deaths (corrected),	289	291	309	266
Death-rates,	13·5	13·6	14·5	12·5
Zymotic death-rates,	0·8	0·8	0·7	1·0
Pulmonary death-rates,	4·4	2·5	3·0	2·3
Deaths—				
Under 1 year,	59	68	68	53
60 years and upwards,	77	73	103	74
Deaths from—				
Small-pox,	7	7	1	5
Measles,	10	8	11	5
Scarlet fever,	1	2	...	1
Diphtheria,	1	3	2	2
Whooping-cough,	4	2	1	3
Enteric fever,	...	1	...	1
Typhus,	1	...	...	...
Cerebro-spinal fever,	2	2	1	..
Diarrhœa (under 2 years of age),	4	7	8	15
Bronchitis, pneumonia, and pleurisy,	63	37	54	38
Cases reported—				
Small-pox,	16	18	34	18
Cerebro-spinal meningitis,	6	3	2	...
Diphtheria and membranous croup,	19	27	24	23
Erysipelas,	18	18	10	13
Scarlet fever,	52	57	52	64
Typhus fever,	1	...	...	...
Enteric fever,	1	6	1	5
Phthisis,	89	35	39	54
Puerperal fever,	2	8	2	3
Measles,*	343	360	194	211
Ophthalmia neonatorum,	16	18	9	19

* Measles not notifiable

Sanitary Chambers,
Glasgow, 30th June, 1920.

THE

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ORIGINAL ARTICLES.

THE DIGESTION AND ABSORPTION OF FATS IN A CASE OF CONGENITAL ATRESIA OF THE BILE DUCTS.

BY H. S. HUTCHISON, B.Sc., M.D.,
Major, Indian Medical Service;

AND

G. B. FLEMING, B.A., M.D.,
Dispensary Physician, Royal Hospital for Sick Children, Glasgow.

(From the Medical Department, Royal Hospital for Sick Children, Glasgow, and Department of Physiology, Glasgow University.)

CONGENITAL atresia of the bile passages is not an excessively rare condition. Over one hundred cases have been reported, careful anatomical and histological examinations have been made in many of them, and, for exhaustive studies of these aspects of the condition, the reader is referred to the papers of Thomson,[6] Milne,[4] and Holmes.[1] Suffice it to say, that in the present case the anatomical abnormality corresponds to that found in Holmes' case. Our chief reason for recording the case is that it afforded an opportunity of studying the *rôle* of the bile in the digestion and absorption of fat.

By clinical and laboratory observations we were able to conclude that no bile was entering the alimentary canal, though pancreatic lipase had access to the gut (this was confirmed by *post-mortem* examination), but we were unable to determine the site of the obstruction in the bile passages. Could a means of locating the position of the obstruction be devised, it would be of the greatest assistance to any operative procedure that might be contemplated, although it is exceedingly doubtful, in view of the early development of cirrhosis of the liver in this condition, if operative measures would ever be successful.

Clinical history of case.—M. A., male, aged 4 months, was admitted to the Royal Hospital for Sick Children, Glasgow, on 3rd October, 1919, with a history of vomiting and jaundice since the age of three weeks.

Father and mother alive and well. There is no history of deformities in the collaterals. Patient was the first child of the marriage. The labour was normal and the child was apparently healthy at birth, and seemed to thrive satisfactorily until the age of 3 weeks. The mother states that from birth the motions have always been almost white. At this time he developed jaundice and commenced to vomit. Treatment was of no avail: the degree of jaundice varied from week to week, but never disappeared. The stools were well formed, but pale and offensive. The child was breast-fed until admission.

On admission he was described as a fair-sized, moderately well-nourished child weighing 10 lb. 2 oz., with marked icterus of the skin and sclerotics. There was shotty enlargement of the inguinal axillary and cervical lymph glands. Nothing abnormal was discovered in the heart and lungs. The tongue was furred, otherwise the mouth and throat appeared normal.

Abdomen—The lower border of the liver, which was firm and regular in outline, was palpable three fingerbreadths below the costal margin. The spleen was palpable two fingerbreadths below the costal margin. The urine contained bile pigment. The stools were almost white, with a slight brown tint in places, probably due to an admixture with urine. On several occasions the stools, uncontaminated with urine, were examined for urobilin and bile pigments, with negative results. The Wassermann test and the Von Pirquet tuberculin reaction were both negative.

From 11th to 14th October the child was placed on a metabolism bed in order that the stools might be collected uncontaminated with urine. Details of the method of examination and results are given below.

On 14th October powders of bile salts grs. 1/2 and pancreatin grs. 3 were administered three times a day. On the 16th there was some vomiting, and on the 17th the temperature rose to 99·6° F.; this steadily increased until the 20th, when it registered 102·6° F., falling on the two subsequent days. The child died on the 22nd. From the 18th till the day of death there were frequent loose motions. The weight continued fairly steady until five days before death, and thereafter diminished by about 1 lb.

Summary of post-mortem examination.—The body is that of an emaciated infant. It is deeply jaundiced.

No lesion is found in the thoracic viscera.

The peritoneum is normal.

The liver weighs 8 oz. It is very firm in consistence, of a deep olive-green colour, and shows advanced monolobular cirrhosis. Strands of fibrous tissue form a whitish meshwork which contrasts markedly with the dark green liver substance. The gall-bladder and cystic duct are very much shrunken, and form a fibrous cord-like structure with an extremely narrow and scarcely demonstrable lumen. The hepatic ducts are normal in their distribution, but are somewhat dilated. The common duct at first appears to be absent, but on careful dissection an attenuated fibrous cord is found passing forwards and downwards from the inferior aspect of the junction of the hepatic ducts. This corresponds at its origin to a small depression on the inner side of the wall of the united hepatic ducts—evidently the occluded orifice. No lumen can be found in the proximal half an inch of this structure, but beyond this, for a distance of about one quarter of an inch, a delicate hair-like lumen is found.

This cord becomes lost in the connective tissue of the gastrohepatic omentum. No trace of the bile duct is seen in the region of the papilla of Vater, though the pancreatic duct, which is patent and apparently normal, opens into it as usual. Sections of the liver show a typical monolobular cirrhosis with extensive connective tissue formation in the portal tracts. The larger bile ducts are not notably dilated, but there is much bile pigment in the liver cells and bile capillaries. The liver cells are, on the whole, well preserved, but there are areas of atrophy and fatty degeneration. In places the intralobular capillaries are dilated and engorged with blood.

The pancreas appears to be quite healthy.

A moderate degree of gastro-enteritis is present, otherwise no evidence of disease is found in the stomach or intestines.

No gross lesion is found in the other abdominal viscera.

Investigation of fat metabolism in the case. Methods.—The patient was placed on a metabolism bed for three days and the daily output of urine and fæces collected separately. The fæces were dried over a steam bath in a weighed basin, and a sample of about 2 grams taken for analysis. The sample was ground up in a silica basin with about 20 c.c. of ether, and filtered through a fat-free filter paper into a fat extraction flask of known weight. This process was repeated till about 100 c.c. of filtrate were obtained. The ether was then distilled off and the residue weighed. The residue consisted of neutral fat and free fatty acids. This was again dissolved in neutral alcohol, and titrated with N/10 caustic soda. By this means the quantity of free fatty acids was determined in terms of stearic acid.

The original residue, after the first extraction with ether, was then treated with a small quantity of 50 per cent HCl, and heated over a steam bath almost to dryness. In this way the soaps were split up, free fatty acids being liberated. These were extracted as before, and weighed.

The quantity of milk taken at each feed was noted, and measured samples of each feed were set aside for fat analysis; by this means the quantity of fat ingested by the patient was accurately determined.

Results.—1. Digestion of fat: The motions were perfectly white and very greasy, and it was obvious that a large quantity of fat had escaped absorption. After the first ether extraction, when the ether was evaporated off, it was clear that there was very good fat splitting, as the residue, on cooling, at once crystallised into a solid mass. The degree of digestion was estimated by the amount of fatty acids and soaps in the fæces fat. In health it has been found that 95·2 per cent of the fæces fat is split into free fatty acids and soaps. In this case the degree of splitting was 86·9 per cent. Though there is a distinct defect in the splitting of fat in the intestine, the extent to which digestion of fat proceeded in the absence of bile from the intestine is surprising.

In the absence of any proof to the contrary, one must assume that neutral fat is not absorbed as such, and so, in this case of atresia of the bile duct, there is a definite loss of fat to the body through defective digestion, but the loss from this cause is not as great as would be expected. On an average, the daily loss of neutral fat was 1·87 grams out of an intake of 19·6 grams.

2. Absorption of fat: The absorption of fat was very defective. It has already been shown[2] that the fæces fat forms on an average one-third of the dry fæces weight, and that, for a true appreciation of the percentage absorption, the observed result must be compared with one calculated for the fat intake and fæces weight of the case under consideration. In the present case the following results were obtained :—

	Fat Intake in Grams.	Fæces Weight in Grams.	Fat Retained in Grams.	Percentage Absorption Observed.	Percentage Absorption Calculated from Weight of Fæces.	Ratio of Fæces Weight to Fæces Fat.
1.	20·3	22·7	4·0	19·7	63·0	1·3
2.	20·8	35·2	– 0·7	– 3·3	43·7	1·6
3.	17·9	21·7	4·2	22·9	59·7	1·5
Av.	19·6	26·5	2·5	13·1	55·1	1·4

It will be seen, then, from this table that the absorption of fat is only about a quarter of what it should be, so that there is very defective absorption.

This fact is also seen in the ratio which the fæces weight forms with the fæces fat. Normally, this ratio averages 3 to 1, or, in other words, the fæces fat forms 33·3 per cent of the dry fæces weight. In the present case the ratio was on an average 1·4 to 1, the fæces fat forming, on an average, 65·5 per cent of the dry fæces weight.

We see, therefore, that in this case there is a deficient absorption of fat from a slightly defective digestion of fat, from the large size of stools, and also from a true defective absorption, but particularly the last.

Remarks on fat absorption.—It is generally admitted that neutral fat is not absorbed as such from the bowel, but that it is first split into soaps and fatty acids.[3] In our case the fat was split almost as well as in the normal, and the loss to the body on this account was small. It might be argued that the high degree of fat splitting was not carried out in the absence of bile by the pancreatic ferment, but by the intestinal lipase and putrefactive processes in the bowel. It is generally recognised, however, that in the absence of pancreatic secretion the percentage of neutral fat in the stool is high. In this case there was 13·1 per cent of neutral fat, whereas in the stool in pancreatic disease the percentage of neutral fat is probably about 50 per cent, though there is some difference of opinion on this point, the figures of different authorities varying from 20 per cent to 75 per cent.[5, 7]

In view of this, and the fact that, *post-mortem*, the pancreas was found to be normal and its duct patent, we must conclude that the absence of bile only inhibited the lipolitic action of the pancreatic secretion to a small extent. On the other hand, the analysis of the stools revealed a gross defect in the absorption of soaps and fatty acids, and, the one abnormal factor being the absence of bile from the gut, it is reasonable to suppose that bile acts as an important factor in the absorption of fat, rather than as an aid to the fat splitting properties of the pancreatic secretion.

Conclusions.—1. The case presented complete atresia of the bile ducts, and no bile entered the gut.

2. The digeston of fat by fat splitting was only slightly inhibited.

3. Fat absorption was greatly decreased.

4. The bile therefore seems to have only a slight influence on the fat splitting properties of the pancreatic secretion. Its chief *rôle* is to aid absorption.

We have much pleasure in recording our gratitude to Dr. Wilson for his report on the *post-mortem* examination, and to Dr. Leonard Findlay and Professor Noël Paton for much help in carrying out the clinical and chemical investigations.

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PSYCHOTHERAPY IN GENERAL PRACTICE.

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Psychotherapy will always remain a specialty, but it is very advisable, as in the case of other specialties, that the general practitioner should be to some extent familiar with its principles and methods, should know when it is indicated, and should himself be able to deal with the more simple or early cases requiring it which may come under his notice. Writing as I do from the standpoint of a general practitioner, I therefore make no apology for the rather elementary and incomplete character of this paper.

It is surprising to observe how frequently the admitted psychic origin of many physical symptoms fails to lead, as it logically should, to an acceptance of the principle that psychic diseases demand psychic treatment, that what mind can cause mind can cure. We have all laughed, we have all wept; most of us in our student days, if not since, have on certain critical occasions experienced perspiration, tremor of the limbs and voice, possibly diarrhœa, merely because we were asked to sit at a table opposite two respected senior members of the profession: some of us fainted at our first operation, a few of us have even been known to blush. We know, in short, from personal experience, that muscular movements sometimes amounting to convulsions, alimentary disorder, disturbances of respiration, circulation and secretion, may all be produced, even in persons who are in perfect physical health, by causes which are wholly and entirely mental. Manifestly then, in any case where mentally produced symptoms have become persistent and obtrusive, the rational therapy of the condition must be directed towards the mind and must work through it. If we decide that a patient's illness is due to wrong habits of eating, we try to teach him right habits of eating; if we decide that his illness is due to wrong habits of thinking, we—give him bromide!

Physical symptoms are never *purely* physical, there is always a psychic factor; because the apperceiving and estimating of sensations depend upon the mental make-up of the individual and his psychic state at the moment. Many physical symptoms are entirely psychic in origin, in some cases psychic symptoms are superimposed on physical symptoms, and in other cases a symptom originally physical in origin may, by the formation of a mental attitude or habit, become of a purely psychic character, and persist as such long after the original physical cause has ceased to act. Not all painful scars are due to the involvement of cutaneous nerves, nor are all post-influenzal coughs tubercular.

The "neurotic" is one of the major problems of general practice. War experience has made the problem more acute, and has also provided some guidance towards its solution. It is to be hoped that the valuable work which has been done for military neurotic patients will lead to a more general and systematic study of the similar, if less dramatic, cases which are so common in civil life. Let it be granted that many neurotics are unpleasant people, difficult to treat, and still more difficult to live with. That is not more the case than in other diseases which have received a large share of interest and investigation. Their complaints may appear unreasonable or incomprehensible, they may be wayward and unmanageable, they may appear to be doing their best to prevent recovery: but these things are the signs of their disease, just as much as the fever and rash of a child with measles.

We must guard against the all too common use, in connection with such cases, of the word "imaginary." Malingering aside (and neurotics are not malingerers), if a patient says he has a pain we must accept the statement, and regard his pain as real. We may conclude, after examination, that the origin of the pain is in his imagination, or on the other hand in his appendix, but in either case we must proceed to deal with the pain at its source. Failure to do so is, from the scientific point of view, equally bad practice in either case. No patient suffers from an imaginary disease (the phrase is, of course, a meaningless contradiction in terms), but many patients suffer from a diseased imagination, and the diseases of the imagination are as real and as worthy of respect and attention as those of any other part of the organism.

This leads me to refer to the great importance of a careful physical examination of neurotic patients, a proceeding which the budding or the bigoted psychotherapist is sometimes apt to neglect. It is humiliating to find that one's case of "hysterical vomiting" really has got an organic disease of the stomach after all, or to see the "neurasthenic" over whose worries one has spent many hours become perfectly well after the dentist has dealt faithfully with his septic mouth. Curiously enough, it does not appear to be equally humiliating to find a case of insomnia, in which all the drowsy syrups of the East and all the synthetic hypnotics of the West have proved equally unavailing, cured in a couple of weeks by the simple psychotherapy of another practitioner: or worse still, to see a patient whose neuralgic or spasmodic affection has defied the whole pharmacopæia (plus massage and electricity) become a convinced and enthusiastic pervert to Christian Science. His argument is old, but no really good rejoinder has yet been found to it—"One thing I know, whereas I was ill, now I am well; no thanks to you." Doubtless the consoling power of the great word "imaginary" does something to lessen one's sense of failure.

In the matter of classification of neurotic states, no unanimity or finality has yet been reached, or even approached, but I venture to specify four main types, neurasthenia, anxiety states, hysteria, and psychasthenia. The cases most frequently met with are apt to show signs of more than one of these, and the limits of each group are difficult to define.

The term *neurasthenia* appears to be changing its significance. At present it appears to cover on the one hand cases of actual organic disease affecting the internal secretions, and on the other hand cases more properly included in the class of anxiety states. But I think that from the point of view of general practice we may usefully retain the term as including a group of relatively mild neurotic states in which simple methods of psychotherapy are valuable and adequate. Neurasthenia is an exhaustion, and its characteristics are excessive fatigability and irritable weakness. Disorder of the internal secretions is present and obvious in some cases, auto-intoxication in others; but an emotional factor, a psychic strain of some sort, is present in *all* cases, and therefore presumably is primary. The thyroid and its allies may overwork or may strike, hidden organisms in bowel or antrum may do their awful worst, but without worry there is no neurasthenia. And the statement of a neurasthenic who says he has no worries is to be received with the same caution as would be that of a case of exophthalmic goitre who said she had no thyroid gland.

Nothing tires and exhausts more than emotion, especially if it is denied its natural expression: intense feeling, and the effort for self-control, alike make large demands on the nervous energy. All causes of emotional strain must therefore be carefully and tactfully investigated and discussed, and the patient led to regard them, so far as may be, in a detached and matter-of-fact way. Apart from some such proceeding, rest-cures, tonics, sedatives, electricity and symptomatic treatment are all bound to fail. The principle involved is so well recognised in ordinary life that our hesitation to act upon it in medicine is rather surprising. If a business man, on returning home in the evening, kicks the cat for being in the way, scolds the children for making a noise, and swears at the cook for spoiling the dinner, his wife does not forthwith drown the cat, send the children to stay with their grandmother, or (least of all) dismiss the cook. She simply and rightly concludes that he has been worried at the office, and does not pay too much attention to the incidental outward expressions of his worry. In the same way, the neurasthenic may express his mental unrest in terms of headache, indigestion, palpitation, backache, neuralgia, and so forth; but to concentrate on these things, leaving the patient's mental state and outlook on life untouched, can only make matters worse, and is obviously an unscientific method of dealing with the case.

Next to the necessity for this exploration of mental stresses, I would briefly refer to two other great needs of the average neurasthenic, namely, relaxation and control of the attention. By relaxation one does not at all mean a vague and indefinite "resting," but a deliberate and purposeful proceeding, a systematic relaxing of every voluntary muscle and of all mental effort, the attention being fixed on some indifferent mental image or line of thought, which will hold it, but without strain. The neurasthenic is "strung up," his mind is, as it were, in a constant state of high tension, and to lower that tension, to relax, to be "unwound," is at once his great difficulty and his great need. Half an hour of such relaxing daily—and let me repeat that it is an entirely different thing from "lying down after lunch"—has, in my experience, been the saving of quite a number of patients who were in danger of collapsing under special worry and strain during the war.

The neurasthenic cannot concentrate his attention, he cannot limit the boundaries of his consciousness at any given moment, or decide what he will, and what he will not, think about. He knows his own difficulty well enough, and such complaints as "my head feels all mixed up," "my mind goes round and round," are frequently on his lips. He must therefore be taught how to direct and fix his attention. Various exercises may be practised with this object, all demanding for successful execution the complete concentration of the attention for a limited time. (In this connection a widely advertised system of "mental training" is worthy of notice.) Even those of us who are not neurotic know from experience the supreme importance, alike for efficiency and for peace of mind, of being able to control and direct our mental processes, and he who can do so wisely and well need have little fear that he will ever suffer from neurasthenia.

Anxiety states have now, largely as the result of war experience, been more clearly recognised and differentiated, and are already being themselves classified, but for our present purpose they may be taken as a single group, with relations on the one hand to neurasthenia, and on the other hand to hysteria, and that group will be a fairly large one. These patients are unable to co-ordinate and evaluate their mental and sensory impressions, they are lacking in "balance," sensitive to the smallest mental or physical stimulus. I treated a typical case in a nursing home, from the windows of which there is a very fine and extensive view. She stated that she could not bear to look out of the window, because the view was so beautiful that it made her weep—which it actually did. She had no power, that is to say, of graduating and controlling her response to an emotional stimulus. These patients are well described as being in a state of *anxiety*, which may be chronic, and may also show acute attacks. The patient I have just referred to sent for me urgently late one night, and I found her sitting up in bed, untidy and dishevelled, with staring eyes and racing pulse and laboured breathing. All that she complained of was *fear*, but she was quite unable to say what she was afraid of. Such patients often complain of the physical symptoms of anxiety, palpitation, dizziness, nausea, suffocative sensations and so on, and they frequently suffer from *obsessions*. "An obsession is an idea, action, or fear, intruding itself into consciousness in a manner which is felt by the patient to be irresistible. It does not fill the field of consciousness, or dominate it indisputably. It is . . . recognised by the patient as being in itself inadequate and insubstantial" (Bernard Hart). (Note the distinction from the definite false belief which constitutes a *delusion*.)

Obsessions, whether mental or motor, and obsessive fears or *phobias*, indicate, as do anxiety states in general, a repressed and unresolved complex, that is to say, a system of associated ideas with a strong emotional tone, which the patient has been unable or unwilling to face fully and to think through frankly, which he has therefore tried to expel from consciousness, and of the existence of which he may, by this process of *repression*, have become more or less completely unaware. If repression is successful the emotion associated with the repressed complex is left, as it were, free and unattached, and may attach itself to some other idea in the mind, originally of a neutral character, or, in a more indefinite way, may affect the mental attitude as a whole, as in the not uncommon type of case where the patient complains simply of fear, though he is well aware that so far as he knows there is nothing whatever to be afraid of. The original and particular cause of the fear lies far back, may be completely forgotten, and will only be accessible after a certain amount of mental analysis, sometimes prolonged and difficult, sometimes rapid and easy, while the fear itself has become detached and, finding no other specific attachment, remains vague and incomprehensible: but not and never therefore "imaginary."

Incidentally, this mechanism of detachment of emotion or energy from its original source is the basis of the process known as *sublimation*, which is of great importance educationally as well as medically. For example, the self-assertive and pugnacious instincts of the schoolboy are repressed under parental and scholastic discipline, but an outlet for the abundant energy and emotion thus made available is provided in the form of competitive games and athletics. And in practice the direction and assistance of a similar process is sometimes an important part of psychotherapeutic treatment.

As a simple example of the kind of condition I have described, I may mention the case of a patient who complained she was unable to go into the town without feeling extremely uncomfortable and distressed, because, she said, she saw so many people. Further enquiry showed that she was particularly affected, sometimes to the point of faintness, if she had occasion to go into a shop where a number of other customers were present; and eventually, after a very long conversation, she recalled an almost forgotten but painful incident, when she had been suddenly taken ill, to her great embarrassment, in a crowded shop. One or two further conversations sufficed to give her complete relief. Such cases may sound trivial, but the discomfort and actual misery of many of these patients is very real and deserving of help, and such a condition may well become the starting-point of an intractable neurotic state, which, if not dealt with radically at the beginning, may give endless trouble to all concerned. The logical and rational treatment is, in a simple case, easy, rapid and effective; while the jovial "don't think about it" treatment and the solemn bromide and valerian treatment are alike too often futile.

A couple of years ago I treated a boy of 17 years of age who had a motor obsession or *tic*, which consisted in a repeated involuntary and incontrollable movement of the right arm, the hand being jerked up to the forehead after the fashion of a military salute. The facts that he was approaching military age, and was unhappy in his work owing to the bullying habits of his employer, were suggestive; but he was rather an unintelligent youth, and I was unable by analysis to discover the origin of the symptom. I therefore treated him by hypnotic suggestion, which seemed a justifiable short-cut in such a case, and was able with a little trouble to secure the disappearance of the movement. (I think Freud would put this case in the separate class of "compulsion neuroses," but it appears to be sufficiently closely related to an anxiety state to be for our purpose included under that heading.)

Hysteria.—No generally accepted definition of hysteria has yet been formulated. The work of Freud, though of unique value and importance, has by no means completely clarified the subject. His view, if one may venture to attempt to put it in a sentence, is that a hysterical symptom is a manifestation of a conflict in the unconscious mind between a repressed wish and an inhibition, the wish finding a symbolic or disguised expression by means of a physical symptom, through the process termed "conversion," and the tension of the conflict being thus relieved. If the conflict expresses itself by means of a *mental* symptom, the result is an anxiety state, such as I have described. According to Freud, the repressed wish is always of a "sexual" nature, though he gives to that term a very much wider significance than it usually bears or indeed seems capable of bearing.

Babinski has defined hysteria as a "pathological state manifesting itself by troubles which it is possible to reproduce by suggestion, in certain individuals, with perfect exactitude, and which can be made to disappear under the influence of persuasion (contra-suggestion) alone." As it stands, this definition does not appear to be entirely incompatible with the Freudian theory. The latter goes deeper, in that it attempts to explain the nature of the "pathological state" itself. Suggestibility of an abnormal degree is thus proposed as an essential condition of hysteria; but while it is recognised that hysterics are, as a class, undoubtedly hyper-suggestible, the definition does not take us much further.

Certain cases, especially those which appear to follow on some sudden shock or accident, have been explained by means of the mechanism known as *dissociation*, which signifies a splitting off of an element in consciousness from the main stream. In hysterical anæsthesia, for example, the cutaneous nerves are in perfect order; but the part of the mind which appreciates and interprets sensations from the area involved has become detached from the general consciousness, and there is thus a localised anæsthesia. The process of dissociation is seen in its most complete form in cases of double or alternating personality, of which a number have been reported, and all degrees of the condition have been produced experimentally by means of hypnotic suggestion.

For practical purposes at the present time we may say that individual hysterical symptoms are frequently produced by suggestion, that in many cases, if not in all, the factor which both produces hyper-suggestibility and determines the particular nature of the symptoms is an unconscious mental conflict, and that the treatment for symptoms and underlying factors alike is some form of psychotherapy. (The word "suggestion," of course, includes the auto-suggestions of the patient and the suggestions of others to him, whether these be deliberate or accidental, direct or indirect.) Questions as to exactly how and why mental unrest expresses itself through physical symptoms, and further questions as to why any particular symptom comes to be present in any individual case are, of course, fundamental, but their full discussion would lead us too far for the limits of this paper. Some symptoms are clearly the result of suggestion, as when one child with chorea starts other children twitching; some are a defence, as when a paralysis saves the patient the trouble of deciding whether he will or will not undertake a certain course of action; some are symbolic, as when a morbid anxiety about physical cleanliness indicates a repressed feeling of moral defilement. But *all* are products of the unconscious mind. It is sometimes wise for us to remind ourselves that hysteria is a disease, and not a disgrace, and that the patient is no more responsible for having it than he would be for having any other illness. Nobody *wants* to have hysteria. Patients may appear to manufacture their symptoms, but they do not do so deliberately. Until the underlying cause is removed they are bound to have symptoms of some sort, and if one set are banished by symptomatic treatment another set will inevitably take their place. If they indeed afford relief to a state of mental dispeace it is not surprising that a hysteric should cling to his symptoms, and though our patience may be severely tried we must remember that we are dealing with illness, not with mere "cussedness."

A recent case of my own provides so good an example of some hysterical phenomena that it seems worth reporting at length. A boy of about 15 years of age suffered from infantile paralysis at an early age, which had left him with considerable weakness and atrophy of the right leg. Otherwise he was healthy and intelligent, his only disability being a very obvious limp. He was an only child and rather petted. His father was serving in Mesopotamia at the time, and the boy and his mother were constantly worrying about him. The mother asked me to see the boy, who was previously unknown to me, because she thought the limp was getting worse. I suggested a course of massage, but after the first sitting the boy was much upset and forthwith developed a paralysis of the *other* leg, with very marked tremor, exaggerated knee-jerk, no true ankle-clonus, normal plantar reflex, and no anæsthesia. From that time he was completely unable to stand. This condition was followed in a day or two by the development of the most remarkable convulsive attacks I have ever seen or heard of. If the legs were handled in any way, and sometimes without any stimulus at all, the tremor became increasingly violent, and the boy would announce that an attack was coming on, turn down the bedclothes in a curiously calm and deliberate manner, and proceed to kick out with the left leg (originally healthy) in the most violent and uncontrollable fashion. The attack then involved the right leg also, and finally the whole trunk, the boy throwing himself up and down with great force till at certain moments he was literally standing on his head. The movements then became gradually less violent, and finally passed off, leaving him completely exhausted. He remained perfectly conscious the whole time. His mother received several very severe kicks in trying to restrain him, and the whole head and foot of the bed had to be liberally padded. The attacks varied in frequency, sometimes a week clear, and sometimes three or four in one day, and full doses of bromide, chloral, and opium had little or no effect on them. I ultimately sent him to hospital in Edinburgh, and while there he had no attacks at all, but the paralysis and other symptoms persisted. He was sent home in about three weeks with a diagnosis of "cerebral palsy," and no sooner was he home than the attacks recommenced in full force. He was then sent to hospital again, this time to Glasgow, and again the seizures ceased during hospital residence. He was sent home without a diagnosis, but with a very grave prognosis. By this time I was, of course, satisfied that the idea of any organic cerebral condition being present could be set aside, and that my original suspicion as to the hysterical nature of the case was right, though my lack of courage and the mother's desire for another opinion had prevented me from acting upon it. Accordingly, I explained to her in presence of the patient the mental origin of the symptoms, strongly and repeatedly suggested to him an early and complete cure, and in a few weeks he was restored to his former condition, and is now, eighteen months later, in excellent health. I need not discuss the pathogenesis of this case, though I think I know what the whole-hearted followers of Freud would say about it; but it seems plain that the exciting cause of the condition lay in thoughtless observations made in the boy's hearing by his mother, the masseuse, myself, or some of the other physicians who examined him. The case is a good illustration of the super-position of a functional disorder on an organic disability; and cases of a similar nature, if less impressive in details, are much commoner than is generally realised.

The term *psychasthenia* was formerly used to cover, among other conditions, some of the anxiety states which have now been more clearly defined. I think it is still of service to signify a group of cases showing neurotic symptoms in which the patient's whole mentality at its best is somewhat below the normal standard, and can never be brought up to it. "Psychasthenia is the neurasthenia of degenerates," and it is in this class that "border-line" cases are to be placed. Patients may show any of the symptoms found in other classes, but obsessions and fixed ideas are especially common. Manifestly, as the mental substratum is unreliable, diagnosis must be more difficult, prognosis more uncertain, and treatment less satisfactory than in the other classes, but, though it cannot add to an originally defective mental endowment, psychotherapy can still do much for these patients. It has been, and will increasingly become, the means of saving some cases which without it would inevitably drift into insanity and an asylum. The group is relatively small, and one must be chary of using it as a refuge after failure to effect the cure of a neurotic patient. For it must be emphasised that the existence of a neurosis is by no means an indication of defective mentality—very far from it.

The methods of psychotherapy are persuasion, suggestion, analysis, and re-education. Rest, isolation, massage, electricity and such things are useful accessory agents in certain cases, but always secondary to mental methods.

Persuasion simply means therapeutic conversation, and in practice one meets with a large number of simple cases where a frank discussion and explanation, with some common-sense advice, is all that is needed. These cases are not on that account to be regarded lightly or treated at haphazard. Failure in prompt and radical treatment of a superficial whitlow has often led to the loss of limb or life, and neglect of early neurotic complaints may easily lead to the establishment of a neurosis which defies all treatment, and permanently lessens the patient's usefulness and happiness. One of my patients complained of persistent diarrhœa, for which no obvious cause could be found, and which was his only symptom. The ordinary sort of mixture kept it more or less in check, but whenever he stopped taking it he was as bad as ever. After some enquiry it appeared that he never had diarrhœa in the house, but only if he was outside, and that he was always worse if he went to "the pictures," or if he was in the company of the opposite sex. It was thus clear that his trouble was really the fear of an urgent call coming when he was not in a position to answer it promptly: so long as he sat in his chair, with every modern convenience next door, he was perfectly comfortable. He at once saw the force of the explanation I gave him, and from that moment he took no more medicine, and had no further trouble.

Suggestion is a proceeding undertaken with the object of securing the acceptance of an idea by the patient *on an inadequate rational basis.* This qualification must always be remembered. The patient referred to above accepted the idea of cessation of diarrhœa, but I gave him perfectly adequate rational grounds for accepting it; he was not treated by suggestion, but by persuasion. Suggestibility is a natural attribute of humanity, varying in degree in different individuals, and in the same individual at different times. It is influenced by upbringing and education, and by the state of the general health, and further depends on the character of the particular suggestion made, its force, and the authority with which the patient invests it. (I might here mention the naturally high degree of suggestibility found in children, which often makes them excellent subjects for this form of psychotherapy.)

That suggestion may be effective in the ordinary waking state, such facts as the undoubted cures wrought by Christian Science, and the large sales of patent medicines, afford ample proof. Conjurors, shopkeepers, auctioneers, and political orators frequently secure their most striking successes without any basis which could be described as rational. By one method or another the critical and argumentative faculties of the public or of individuals are put out of action, and the acceptance of the desired idea secured. But in many cases, and especially in medical matters, these troublesome faculties are not so readily discounted, and so the scope and value of *hypnotism* become plain.

It must be remembered that hypnotism is not in itself a curative agent, any more than chloroform. But just as in the case, for example, of a dislocated shoulder, chloroform will abolish the muscular spasm and resistance which, with the best will in the world, the patient cannot himself prevent, and will thus enable the necessary manipulations for the reduction of the dislocation to be carried out; so by hypnosis the attention can be distracted and the critical faculty as it were anæsthetised, thus making it possible for the curative suggestions of the operator to be accepted and acted upon. It is clear that the consent and co-operation of the patient is essential, and the more active and intelligent these are, the better will be the result. In the case of a girl of 15 years of age, who had been in the habit of wetting the bed almost nightly for twelve years, it would have been futile simply to tell her that it was henceforth to be impossible for her to pass water while lying down—as futile as all her varied drug treatment in the past had been; but precisely that suggestion, made after I had put her into a state of light hypnosis, was sufficient to stop the trouble forthwith. Two further sittings clinched the matter, and there has been no recurrence. Among other cases in which I have found hypnotic suggestion of value for the relief of physical symptoms I might mention nervous spasms of the nature of tics, neuralgia, general "jumpiness," certain cases of asthma, vomiting of pregnancy, masturbation, and post-operative pain and insomnia. I was able to produce considerable improvement in a case of diabetes insipidus: reduction of the urinary output from 22 pints daily to 15 added materially to the patient's comfort. The fact that symptoms have an obvious physical cause need not prevent one from using hypnotic suggestion in addition to other measures for their relief, for, as I have already said, there is always a psychic factor present, which is capable of being influenced. Numerous books on hypnotic suggestion are now available, in which methods are discussed in detail: the prime essential for success is that the patient should have confidence in the operator, and the operator in himself and his method. There is no more magic or mystery in hypnotism than there is in surgery. Hypnotic suggestion must always have an important place as a psychotherapeutic method, but of course it is to a large extent a treatment of symptoms only, and indeed actually works by means of the suggestibility which we have seen to be itself a symptom of certain cases. Accordingly, it is not the method of choice in hysteria, as a rule, or in cases where mental exploration is needed. It may, however, be of service in such cases, as under hypnosis it is sometimes possible for the patient to recall memories which he has entirely forgotten in the waking state, and these may be of great assistance in any analysis of his mental life.

Before passing from the subject of suggestion, I would emphasise the fact that it is a perfectly definite and scientific procedure. We know, of course, that in our daily work suggestion has a part which is often large. Our presence in the patient's house, our manner, our ritual of examination, our incomprehensible prescription, our very fee, all have a certain suggestive effect, which may be beneficial. But such suggestion is given unconsciously, at random, and sometimes disastrously, for there can be no doubt that we not seldom produce, by the indirect suggestion of our questions or manipulations, symptoms which the patient would never otherwise have had. We may properly place "q.s." or "ad. lib." opposite comparatively inert ingredients like mucilage or water or cheerful conversation, but it is unwise to do so when dealing with potent and even dangerous remedies like opium or strychnine or suggestion.

Analysis.—I avoid the word psychoanalysis: Freud introduced it, he and his school have a perfect right to it, and according to them nobody outside that school is in a position properly to employ the method. However that may be, it is certain that the great majority of the cases coming before a general practitioner do not require a full Freudian analysis, which is fortunate, for the process is said to take anything up to three years in difficult cases. Not that that matters in itself, if the desired result cannot be reached otherwise. Three years would not be too much for the cure of a club-foot or a deformed spine in a young child, and mental orthopædics in an adult with a long and stormy past must often be a lengthy business.

It is impossible to attempt here any discussion of Freudian psychology, but its main principles, relating to such matters as conflicts, complex formation, repression, and sublimation, are now generally accepted, and they are so useful and important that a physician who is dealing with neurotic patients should be familiar with them. Many of his more revolutionary doctrines cannot yet be said to have found their level: the variety and violence of the opinions expressed by writers regarding them would be amusing were they not so perplexing to the ordinary man desirous of studying the subject. It may, however, be said that, in this country at least, Freud's emphasis on the sexual factor—however widely the word may be interpreted—has not found general agreement, and war experience has confirmed the view that conflicts and repressions connected with other fundamental instincts may have as much importance as those connected with sex in determining the occurrence and the nature of a neurosis, though it will be agreed that an instinct so powerful, and also so subject to repression, as that of sex is bound to be of peculiar importance in many cases.

But whatever one may think about the intricacies of Freudian methods, the fact remains that all but the very simplest cases of neurosis require a certain amount of psychological analysis. By a frank and full discussion the history of the disease and of the patient himself must be elucidated—his hopes, his ambitions, his regrets, his worries, the emotional strains to which he has been subjected, and the way in which he has reacted to them. This, after all, corresponds exactly to what is done as a matter of course in the case of a physical disease. It may take a longer time in the case of a neurosis, but that is simply because the mind is a much more complicated thing than the heart or the stomach, and also because there is usually a conscious or unconscious resistance on the part of the patient. If it is important to know that a case of mitral incompetence had an attack of acute rheumatism ten years ago, it is equally important to know that a neurotic had also an "affaire du cœur" ten years ago. In each case the results may only now be apparent, but the latter patient is not quite so ready as the former to give a frank account of his past history.

When all that the patient can tell has been told, it will often be found that the root of the matter has not been reached; it lies beyond the patient's knowledge, in his unconscious mind. That phrase has not escaped criticism; it may be admitted that it sounds rather like a contradiction in terms, and to speak simply of "the unconscious," as is usually done, does not help very much. But, like other scientific conceptions which are even more undemonstrable and difficult to grasp, this one justifies itself because it enables us to explain and predict phenomena, and to formulate laws which are verified in experience.

The full exploration of the unconscious is a matter for experts, but anyone may gain some insight into it, and help from it, by such expedients as a "word-association" test, or, especially, by the investigation of the patient's dreams. For example, a patient with very pronounced symptoms assured me that she was perfectly happy and contented in her life, and knew of nothing that was causing any strain. She related one or two dreams to me, and I noted that in every case they pictured her as a young girl living very happily with her parents before her marriage. If, as Freud teaches, the dream represents the fulfilment of an unconscious wish, the obvious conclusion was that she was not so satisfied with her marriage as would appear, and on further enquiry such proved to be the case. The discovery led to the patient's cure in a few weeks. Another patient told me that in her dream she found herself examining the naked foot of her old aunt. She hesitated a good deal before relating the dream because it was "so silly," and was convulsed with laughter at its somewhat exiguous humour while doing so. This unconscious attempt to minimise the importance of the dream suggested that it was really of considerable significance. It appeared that the aunt was a devout and enthusiastic Roman Catholic, and having told me that, the patient paused for a moment and then said, "Oh, I see; kissing the Pope's toe." The dream indicated, that is to say, that a solution of some of the patient's problems might be found if she became a member of the Roman Catholic Church, and the suggestion was, in the circumstances of her case, quite surprisingly apt. Of course, in neither of these cases was any detailed analysis of the dreams attempted. Doubtless such would have yielded interesting and important results, but as it was one obtained useful and sufficient guidance.

There are two main lines on which dreams are interpreted; the one is that developed by Freud, and described by him in his work on the subject. According to him, the dream represents the symbolic or disguised fulfilment of an unconscious and repressed wish, as in the first case I quoted. The other line is a modification of Freud's which has been elaborated by Jung of Zurich, and according to him the dream may have a more evolutionary and hopeful function, restating a problem or indicating a course of future action, as in my second example. In any case, of course, the real or latent meaning of the dream is quite a different thing from the superficial or manifest content, and its expression is more or less completely symbolic. That being so, interpretation must be more or less arbitrary, or at least open to the charge of arbitrariness. To which Freud's answer appears to be that the proof of a correct interpretation is the patient's recognition of it as such.

Re-education.—According to Freud, a complete psychoanalysis is both diagnostic and curative; once the patient's complexes and repressions are exposed and resolved he is thereby cured. Be that as it may (and on the face of it it seems open to doubt), a large number of cases like those I have referred to in this paper need above all else a greater or less amount of what can only be described as re-education. The man who is fished out of a river in a semi-drowned condition is by no means thereby immunised from drowning should he fall in again. To secure that desirable end he must not only be rescued, he must also be taught to swim. The neurotic whose symptoms have diminished or disappeared during a "rest-cure" or a holiday is in no way protected from a recurrence of them if he returns to his former circumstances, unless he has realised that his former method of meeting those circumstances was wrong, and has also been shown a better method. Having been shown how and why his symptoms developed, he must also be shown how to prevent them from developing again, by a better adapting of himself to his situation. "Every neurosis is essentially a failure in adaptation."

"The point of view, the attitude of mind, the habits of thought, must be modified by the introduction of new points of view, of data previously unknown to the patient, and drawn from the wider experience of the physician; by instruction in the meaning of symptoms and in their causes and organisation; by the suggestion of expectations that justly may be fulfilled, of ambitions that ought rightfully to be entertained, of duties to be assumed which have been too long neglected, of confidence and hope. Thus, the old systems of ideas carrying with them apprehensions, anxieties, and depressive emotions are modified, and new systems of ideas or complexes are created and substituted for the old" (Prince). In many cases the outward circumstances will be unalterable; he must live in a certain house, with certain people, doing certain work, continuing perhaps to suffer from some physical disability or other hampering circumstance. One thing only can be altered, his mental attitude and outlook, and his future will depend on whether and to what extent that is done. For many patients one great need in this direction is that they should have something to "take up their mind," some point of attachment for their energy and interest. *Not* as a means of making them forget their troubles—that is, as an aid to repression, but as a means of expression and development of personality. Almost anything will do, provided it is suited to the patient's circumstances and abilities, and can attract and hold his interest and attention.

The accessory measures, rest-cures, isolation, electricity, and the others, have all their useful place and function, but always secondary to the special individual psychic treatment which the case may require, and I need not refer to them in detail. In many cases their value is mainly or entirely suggestive.

We regard, say, otology as a specialty, but we rightly condemn any practitioner who has not the knowledge, or will not take the trouble, to distinguish between, for example, ceruminous obstruction, middle-ear disease, and Eustachian catarrh, or whose one treatment for all cases of deafness is to provide the sufferer with an expensive and inefficient ear-trumpet. It is to be hoped that the time is coming when the teachers of the profession will realise that many of its members are, through no fault of their own, very much in the position of that reprehensible individual when they are faced with the duty of classifying and treating a neurotic patient. A neurosis is not a fatal disease, but it may be the cause of very great suffering and incapacity. The majority of neurotics are curable, and are well worth curing, for while the placid and bovine person may give much less trouble to his friends, his physician, and himself, the real salt of the earth are potential neurotics to a man. For it is love that makes the world go round, "or" (to quote the immortal *Alice*), "if you would like it put more simply," strong emotion, intensely felt, wisely guided, and efficiently controlled, has been the origin and dynamic of every worthy effort, and every enduring achievement in the history of human progress. And I have tried to show the fundamental importance in the etiology of the neuroses of emotion which is unwisely guided or inefficiently controlled. In the interests of society, therefore, no less than in those of the individual, the neurotic demands and deserves our most serious attention and our most earnest effort.

WAR PENSIONS.*

By JOSEPH GREEN, M.B., C.M.

A WAR pension may be defined as a regular allowance made by Government to one who has been in its military service, or to his widow or dependent relatives. It is usually looked upon not as the discharge of a debt due to the ex-soldier, but as a kind of present or solatium, because in general it is considered that a country has the right to call upon its individual members for military service, and that any payment made is *ex gratia*; but however that may be, it has been usual from early times to promise enlisting soldiers that in case of wounds being received in the service pensions would be granted, though sometimes, as we know, promises have been greater than performances.

War pensions may be divided into disability pensions and service pensions. In the former, which is of more interest to us as medical men, some return is made for wounds, disease, or loss of health incurred in the service, whereas the latter may be simply looked upon as deferred pay for long continued service.

History.—Now, the history of previous War Pension Schemes in this country has not been very creditable. It is difficult to go much further back than the Crimean War, for though pensions were undoubtedly given to decayed and wounded soldiers of the Napoleonic Wars, they seem to have been bestowed in a haphazard fashion, and without definite organisation.

From the time of Charles the Second the question of army pensions in this country has centred in Chelsea Hospital; in fact, it is generally supposed that the Hospital was founded by the famous Nell Gwyn, and was due to her sympathy with the wounded soldiers. The idea at this time was that pensioners should reside in the Hospital under discipline, which was to be in every respect as strict as in any religious convent, as opposed to the idea that a sum of money should be paid to the pensioner with liberty to use it as he pleased. Greenwich Hospital was founded for navy pensioners under the same idea, and both places for a considerable time compelled pensioners to live in the institutions. During the nineteenth century, however, this was more and more departed from, and a larger and still more large proportion were allowed money pensions and liberty to live as they pleased. Chelsea, however, has continued to the present day to be the headquarters for pension administration.

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* Presidential Address delivered to the Eastern Medical Society on 17th December, 1919.

After the Crimean War in 1854 there was, of course, a great expansion in the work. A great wave of feeling passed through the country which compelled the Government to provide more liberally than heretofore for the disabled soldier, and a large voluntary fund called the Royal Patriotic Fund was raised besides by private subscription for the support and maintenance of the widows and orphans. It is to be feared, however, in spite of the keen sympathy felt throughout the country, neither the disabled soldiers nor the widows and orphans were, on the whole, satisfactorily treated. There were two reasons for this. Firstly, there was too great centralisation in administration. All applications had to go to the central offices in London, and all pensions were allocated from there. There was no local office where a man could get information, and there was consequently a lack of human sympathy in the organisation. Also this led, fairly or unfairly, to suspicion of inequality of treatment and partiality. The War Office and Chelsea had never been in personal contact with the pensioners, and those who had to fix the pension never met the individual who was to receive it. Secondly, there was no proper system of assessment for partial disabilities. A man was either disabled or not disabled, and there was no complete system of payment proportionately given for injuries which did not fully incapacitate.

Now, let us look at the organisation that manages pensions at present: see how it has been built up, and whether it satisfactorily fulfils its duties. Considering the comparatively short time since the war ended our pensions system is wonderfully complete. There has, of course, been no war in our history which could in any degree compare with the war we have just passed through. The Napoleonic Wars were long lasting, and were bitterly fought, but only a comparatively trifling number of men were engaged in actual warfare, while in the war the whole nation was as far as possible taken into the army. I know I am speaking commonplaces, but I wish to emphasise the difficulties that have met the Pensions Ministry through the very magnitude of the task.

In many respects the nearest parallel to our position in this war is that of the Northern States of America after their Civil War. There, as here, the whole manhood of the country was engaged either in the fighting forces or in support of them. Again, as in the present war, there was only a very small and voluntary army. The organisation had to be created while the fighting was going on. They, as we, were a democratic country, where each man thought he was as good as his neighbour, and perhaps in some cases a little better. So I think we may fairly compare our position with respect to pensions with theirs, and perhaps draw some lessons from their mistakes. If this comparison be allowed, I think we may justly plume ourselves on the organisation we have built up. Why, one year after the war, in America there were thousands of wounded and disabled soldiers walking the streets, whose title to a pension was indisputable, but who were kept starving by muddled officialism. Though there has been much grumbling over here, and much reasonable cause for it, at least that cannot be said.

Now, how has this organisation been built up? In the early days of the war there was formed a voluntary society called the Soldiers' and Sailors' Families Association, whose object was to look after the families of the men joining the army. A similar society with the same name was formed during the Crimean and South African wars. A very good society it was upon the whole, and an enormous amount of very good work was done, though a good deal of fun was made of the ladies who poked their noses into matters which did not concern them. Naturally, when the breadwinner was killed in France, the question of pension came before the society, and the Local War Pensions Committees were the result. At first almost all the work was voluntary and unpaid, and the creditable way in which it was done was another instance of our national genius for voluntary associations. The organisation has now, however, been taken over by the Government, and, of course, paid workers have taken the place of unpaid. There was perhaps a more personal sympathy under the old *regime*, but the pensions work as presently administered is entirely beyond the power of a voluntary staff. It is not too much to say, however, that the unpaid work done by these committees in the early days was mainly instrumental in redeeming our war pensions business from failure and disaster. The combination of a central organisation at Chelsea with Local War Pensions Committees in each area will, it is hoped, satisfy one of the main objections to the older schemes.

Then there is the question of assessing a man's pension. This is a matter of the very greatest importance, and if friction is to be reduced to a minimum it should be done with meticulous care. It is difficult to say whether it is worse to give a man a higher rate of pension than he is entitled to, or to give a lower. In the first case a man's success leaks out among his friends and neighbours, arouses envy, and many of them try to obtain the same unmerited good fortune. In the latter case the man himself has a feeling of grievance, which is sometimes bitter. How is the assessing done? A man who has been discharged from the army as physically unfit has, as a rule, been in front of a Medical Board before discharge, and has had a certain percentage of disability declared by the Board, and this for the time determines the amount of his pension; but this was done very unequally. At some hospitals almost every man was allotted a full 100 per cent whether he had lost two arms or only two fingers, while at other hospitals, but more rarely, the Medical Boards were perhaps unduly stringent. Besides, only a comparatively small number of those entitled to pension were discharged as physically unfit. A man might be considered fit for certain army work behind the lines, and still have a considerable disability. Consequently only a small part of the work of assessing is covered in this way.

There have been appointed, therefore, Medical Boards in each area, and they are really the backbone of our present system of pensions assessment. The Board consists of three medical men, who have before them all the man's documents giving a record of his physical condition at enlistment, the diseases and injuries he has suffered from while on service, the hospitals he has been in, &c. The Board makes as complete an examination and report as possible. A surgeon, an ear specialist, an eye specialist, and a tuberculosis specialist are in attendance, and can be called in if desired. Then the disability is assessed, the report is added to the man's papers, and his pension is fixed accordingly. The great bulk of assessing work is done by these Pension Boards, and very efficiently done.

It must not be thought that the assessment as thus determined is in all cases for the duration of the man's natural life. In certain cases, mainly cases of well-healed wounds, the assessment may be permanent; but in the great majority of cases there will be a fresh examination every six or twelve months for several years to come, and the assessment may be reduced or increased on each occasion according as the disability has improved or become worse.

Then, again, a guide to assessment is given by means of a list of percentages for definite injuries. Thus, amputation of the right arm through the elbow gives a disability of 70 per cent. Other injuries can be more or less successfully compared with these. It is found in general that there is no great difference of opinion on the Boards in surgical cases, while differences are marked in medical cases, such as rheumatism, bronchitis, nephritis, neurasthenia, &c. The degree of disability varies so greatly from time to time from seasonal or other causes, and it is necessary as far as possible to average up the man's condition over the period for which a recommendation is made, and up to the date when the re-examination is to take place. Difficulties also occur in diseases with short periodic attacks, such as malaria or epilepsy. In many such cases there is no evidence of disability whatever at the time of examination, and the assessment must depend on the man's own statement, or such written statements as he can bring from his own doctor, or from others.

On the whole, the work at the Pensions Boards is interesting, and I can recommend it to any of you who have the time to spare. It will undoubtedly be continued for many years, and many medical men will be required for the work. It is possible that after a time permanent appointments may take the place of the present system, probably part-time employment, one set for each morning and another set for each afternoon. Speaking for myself, it was with some regret I gave up the Boards when I was appointed a Medical Referee.

On these Pensions Boards there is such a tendency after a time to look upon every man as a malingerer that it is an attitude of mind to be specially guarded against. Naturally most of the men who appear before the Boards try to make their condition seem as hopeless as possible, and we know with what leniency "swinging the lead" is looked upon in the army. Consequently one is apt to take a considerable percentage off the statements of every man, and this acts very unfairly towards the occasional honest man who states his case truly, or even in many cases understates it.

Now, there is often very considerable delay after a man has applied for a pension till he can be brought before a Medical Board, so that he is sent to a medical referee to be assessed temporarily. It must be confessed, and I speak as one of them, that the work of the medical referees is much more open to criticism than that of the Pensions Boards. Firstly, the referee has in practice no documents before him to help in forming his opinion; and secondly, it is an individual opinion without the benefit of discussion with others, or of examination by specialists. Consequently, it is frequently found that a man has been receiving for several months a pension to which, in the opinion of the Medical Board, he has had no right. It is perhaps as good a method of temporarily assessing a man as it is practicable; but it is far from ideal, and I think it could without great difficulty be arranged that a man's documents be available.

This, however, is only a comparatively small part of the work of medical referees. In addition to pensions there is treatment provided for disabled men, and under certain conditions the full 100 per cent pension is given while the patient is undergoing this treatment. Put shortly, this is the case if the man is unfit for work with a disability caused by army service. Now this is a very desirable regulation, but it is open to great abuse. In fact, the main criticism of the work of medical referees is that they are too complacent in putting a man upon treatment pension. A typical case is something like this. A man attends a Pension Board with bronchitis, and is awarded a pension of 30 per cent. He is not satisfied, and he goes a week or two later to his panel doctor, who gives him a line that he is unfit for work on account of bronchitis. He takes this to the Local Committee, and is sent to a medical referee. If he is unduly sympathetic and follows the line of least resistance, the man is stated to be unable to work, and is put on treatment with his own doctor with full pension. This may continue for many months, and the opinion which has been given with great care by the Pensions Board is of no avail. They have stated that the man is fit for 70 per cent of his previous work, and immediately afterwards the referee states he is unfit for any work. Such cases are, I regret to say, very numerous. However, there are very many cases where treatment is desirable, and special institutions are provided for suitable cases, such as orthopædic cases, rheumatism, epilepsy, neurasthenia, and tuberculosis, to be treated as in-patients. Then in dental cases arrangements have been made for treatment at dental centres, and by a special rota of dentists, and as the Ministry of Pensions accept responsibility for treatment where the dental defect is either due to, or aggravated by, military service, very many cases could, if desired, be sent forward by the medical practitioner.

That there is an excessive amount of illness among demobilised and discharged soldiers seems to be shown by the statistics recently given at the National Conference of Industrial Assurance Approved Societies. A group of 100,000 men was taken, and their experience before enlistment compared with that after discharge. It was found that the duration of sickness benefit per annum after discharge was almost exactly three times that before enlistment. It was also found that the first year after discharge had the greatest rate of sickness, and that thereafter it greatly dropped.

In addition to the Pensions Medical Boards there have been formed Appeal Tribunals. A Tribunal consists of, I believe, a lawyer, an army officer, and a medical man. A man who feels aggrieved at the decision of the Board can bring his case before a Tribunal. Each case coming before it is carefully considered, and the assessment of the Board can be either increased or reduced. No man who has been first before a medical referee, second before a Board, and third before an Appeal Tribunal, should complain that his case has not been fully considered.

I think I have said enough to show that our arrangements for assessment and for treatment of disabled soldiers are fairly complete considering the comparatively short time we have had, and the enormous amount of work requiring to be done. I have tried to find out what has been done so far in France and in America, but regret to say that I can get no reliable information.

I should like, finally, to say a few words on the dangers of war pensions, and in this connection will give a little of the history of pensions after the Civil War in North America. I have already stated why this may be considered the most analogous case to our own.

In the year 1862, while the war was going on, a liberal War Pensions Act was passed through the U.S. Congress. It was said that no nation had provided so liberally for its disabled soldiers and sailors or for the dependent relatives of the fallen. The cost in 1866 was three millions sterling. I will give figures in round numbers and pounds sterling. The cost of it in the year 1870—that is to say, four years after the conclusion of the war—was roughly six million pounds, and Pension Commissioner Baher said, "We have reached the apex of the mountain." In 1880 the figures had risen to over eleven million pounds. In 1890 they had risen to twenty-one million pounds. In 1900 the figures stood at twenty-eight millions sterling. That is to say, that some thirty-five years after the termination of the war almost five times as much pension money was being paid away as at a period four years after the war. Since 1900 the amount has continued to increase, but part of this was due to the war in Cuba, and it is difficult to separate the two accounts.

What is the reason for this enormous increase in the cost of pensions, and is our country likely to be similarly affected?

There was, of course, a very creditable and praiseworthy sympathy with the soldiers who had won the Civil War and saved their country, and it was the general wish of the country to provide for them liberally. From time to time Bills were brought forward for increasing the rate of pensions, and, as a rule, they passed smoothly through Congress without much opposition. It is easy to be liberal with the country's money.

Then, again, there were undoubtedly very large numbers of fraudulent claims. Many people have twisted notions of morality in these matters. Getting a pension from Government without adequate reason was looked upon pretty much in the same way as cheating a railway company by travelling without a ticket. In America fraud was easy and particularly lucrative. During the years from 1873 to 1878 the cost of pensions showed a decided tendency to become less, and it seemed as if at that time the reverse slope of the mountain had been reached, and that the reduction would continue. In 1879, however, a Bill passed through Congress called the Arrears Act. This provided that on all claims for pensions which were allowed from that date arrears of pension should be paid as from the date of discharge from the army. This meant that some thousands of dollars would be paid over directly a claim was established—a great incentive to fraudulent claims. Unscrupulous agents throughout the States raked up the names of dead soldiers, in some cases from the tombstones on the battlefields. They provided women who claimed to be these soldiers' wives, provided witnesses who swore whatever was necessary for substantiating, and in return drew the arrears money, leaving the claimant herself to draw the subsequent pension. From that date onwards the pensions increased by leaps and bounds.

Again, after the war was a few years over, there was formed a kind of brotherhood of veterans called the Grand Army of the Republic, who met together at intervals, and had a great rally once a year to talk over their war experiences. It was a very good and praiseworthy organisation, but it had its faults. It had a very large voting power at its command, and when there was a question of increase of pension or payment of arrears, or other matter which affected the pockets of its members, the Grand Army of the Republic voted as one man. We have organisations in this country which appear likely to develop the same tendencies.

Now, in conclusion, how shall we escape these dangers? Firstly, it is important to have good records, as far as possible, of each man. The medical men on Pensions Boards are very much inclined to kick against the large amount of clerical work requiring to be done there. The detailed report of the man's condition at each examination appears at first sight unnecessary, but in years to come these reports will be invaluable in giving men justice, and in preventing fraud. Secondly, increases in general rates of pensions should not be supported unless for adequate reasons. Here as in America it is unpopular to oppose in any way liberality shown towards our soldiers. They have the sympathy of the public, and justly so, but the pensions at present given are liberal in their general application, and the occasional cases of hardship may be remedied quite well without a general increase. Thirdly, let us have no Arrears Bill here. It would seem that after a period of five years from his discharge will afford a soldier sufficient opportunity to discover whether or not he is suffering from any disability, and in case he is disabled, to file application for a pension. Where this has not been done there seems to me to be presumptive evidence that, from his own standpoint, he either did not deserve or did not need a pension. If later than this he applies for and obtains a pension, it is hard to see any sound reason for paying any arrears.

A METHOD FOR TEST-MEALS.

BY JOHN MACINTYRE, F.R.C.S.ED.,
Dispensary Surgeon, Glasgow Royal Infirmary.

IN the text-books many means are suggested for evacuating the stomach-contents after test-meals. If retching and coughing fail, we are instructed to press the epigastrium while the patient leans forward, &c. Such a technique suggests the football field rather than the clinique. Yet despite the serious nature of duodenal ulcer or stomach cancer, there are times when only a scrummage will serve as simile when the enthusiastic house surgeon, with nurses attendant, attempts to coax the reluctant tea and toast from a terrified "gastric case."

If, however, proceeds our text-book (leaving the arena of athletics for that of legerdemain), pressure on the abdomen does not succeed, then we must practise another manœuvre. Fill the tube with warm water, then run it out suddenly by lowering the funnel, so inducing a siphon action, and catching the stomach contents "*when they appear after the water!*" It need scarcely be said that such a process means the dilution to some extent of the test-meal; hence a loss of its validity, unless the resident add to his numerous customary accomplishments the eye of a hawk and the hand of a Cinquevalli.

And yet, if wrestling and conjuring fail, are there not instruments called stomach aspirators to fall back upon? There are—but to say nothing of complexities in such apparatus, prices in surgical instrument catalogues at present are enough to induce hyperchlorhydria in any board of infirmary managers, no matter how numerous or hardened in the ways of commerce.

And so the present writer recently devised for his own use quite a simple and cheap evacuator, which has only failed once in thirty cases to give the desired result in a few minutes' time. A similar instrument has possibly been used before, and may not be new; but if so, it is certainly not so well known as it should be.

A wide-mouthed bottle (of pickle-jar shape) with rubber stopper is required. Perforate stopper in two places so as to take two glass tubes bent at right angles, as in a Wolff's bottle. One glass tube must be of the calibre of a medium-sized stomach tube, the other of the calibre of an ordinary Higginson's enema syringe. Join up the afferent ("soap and water") end of the syringe to the lesser glass tube by means of rubber tubing. Join up the external end of the stomach-tube to the larger glass tube in the stopper by means of rubber-and-glass union.

Pass stomach-tube in usual fashion, and pump the bulb of the Higginson's syringe. Air is continuously evacuated, and stomach contents flow continuously into bottle. Should the stomach-tube block by reason of impaction of a semi-solid mass in nozzle or in lumen, the simplicity and usefulness of the apparatus become at once apparent; for by detaching the afferent (or "soap and water") end of the enema syringe, and reversing, so that the efferent (or "anal") end takes the place of the other, air is forced into the bottle and along the stomach-tube. This generally succeeds in dislodging the blocking mass: for on resuming the initial order of manipulations a free flow of more or less digested toast and tea usually results.

As I see the future, the harassed house surgeon need no longer look forward to that part of his work which entails the carrying out of the test-meal ritual as something demanding not only strength but agility beyond his powers. For there is, indeed, no reason (if he use the means I have indicated) why he should not perform his task with all the suave dignity of the mover in a minuet—with all the ease and grace that so denote him during his softer and less strenuous hours in cinema-café or billiard-hall, when "blood-counts" are a very little thing, and "dressings" seem to know him not any more forever.

CURRENT TOPICS.

GLASGOW UNIVERSITY.—At the honorary graduation ceremony held on 24th June, two well-known members of the medical profession were honoured by having the degree of LL.D. conferred upon them—Dr. John Macintyre, Bath Street, Glasgow, who has for long been one of the leading authorities on diseases of the throat and nose, and who was one of the pioneers in x-ray work in this country; and Sir Robert W. Philip, who has done much useful work in tuberculosis, and who was appointed as the first incumbent of the New Chair of Tuberculosis instituted in the University of Edinburgh.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS, GLASGOW.—At the recent examination of the Dental Board, the following qualified and were duly admitted as Licentiates in Dental Surgery:—Alexander B. Black, L.R.C.P. & S.Ed., L.R.F.P.S., Paisley; Donald M. Black, L.R.C.P. & S.Ed., L.R.F.P.S., Paisley; James Barbour, Coventry, Birmingham; Florence Ferguson, Johnstone; Harold Firth, Bradford; Helen Reid MacAndrew, Glasgow; Robert Hunter M'Nair, Glasgow; Robert Pollock, L.R.C.P. & S.Ed., L.R.F.P.S., Glasgow; Sidney Herbert Rhodes, M.A., Birmingham.

ROYAL INFIRMARY, GLASGOW: POST-GRADUATE TEACHING.—During the month of September a very complete series of classes will be conducted by the staff of this institution. Attention is directed to the advertising pages for the details regarding this course.

ASSOCIATION OF CERTIFICATED BLIND MASSEURS.—This Association was registered on 3rd July, 1919, and licensed under the Board of Trade. Its members hold the I.S.T.M. certificate, or some other qualification duly recognised by the Executive Council. The Association has been established to promote, protect, and advance the interests of its members. It aims at securing their recognition and status in the exercise of their calling, and promoting co-operation in all matters relating to massage and physical culture. It is also to be employed as a means of advocating and extending the general use or employment of massage and other physical methods or exercises. The registered office of the Association is 224/8 Great Portland Street, London, W.1, where application for the services of masseurs may be made.

VACCINATION.—Our attention has been drawn to the following quotation, which is noteworthy in the light of the vaccination crusade recently instituted in Glasgow. It is taken from *The Heart of Midlothian* (chapter 36):—"The lady who seemed the principal person had remarkably good features, though somewhat injured by the small-pox, that venomous scourge which each village Æsculapius (thanks to Jenner) can now tame as easily as their tutelary deity subdued the Python." It is interesting to read that in 1818, when small-pox was better known than it is to-day, Sir Walter Scott should refer to the advantages of vaccination in such definite terms. It comes as a refreshing corrective to some of the modern anti-group of faddists.

EAR, NOSE, AND THROAT HOSPITAL.—We have been favoured with a copy of the fortieth annual report of this Hospital, presented at the annual meeting held within the Hospital on 1st July, 1920. The medical portion of the report shows a great increase in the number of patients and in the amount of work done both indoor and at the dispensary. In comparing the figures with those of 1915, it is found that the increase in the number of new patients is 2,166, the total for the past year being 5,508, the indoor department showed an increase of 220, and the attendances at the Hospital were increased by 5,356, this year's actual figure being the very large total of

19,023.. Concomitantly, the operative work has also been augmented: operations under general anæsthesia are increased by 417, and those under local anæsthesia by 517, over the figures of five years ago. In addition to the increase in the numbers drawn from the ordinary population, the Hospital has undertaken the treatment of discharged sailors and soldiers under the Ministry of Pensions, the payments made for these making a welcome material addition to the funds.

In reading the report we are struck forcibly with the entire absence of any reference to the excess of expenditure over income, the burden of the hopeless cry of other hospitals. Rather the managers, with commendable enterprise, recognising the need for more accommodation, have purchased a property at 306 St. Vincent Street, and now are busy accumulating a fund, the nucleus of which is already substantial, with which building operations may proceed at the earliest convenient moment.

Ministry of Pensions.—The following physicians and surgeons, additional to those previously appointed, are announced to act as Honorary Consultants to this Ministry:—

Honorary Consultants in Cardiovascular Cases—William Thomas Ritchie, O.B.E., M.D., Eastern portion of Scotland region; John M. Cowan, C.B.E., M.D., Western portion of Scotland region.

Honorary Consultants—Sir James Dundas Grant, K.B.E., F.R.C.S., Honorary Consultant in Aural Diseases to the Ministry; Hugh Maclean, M.D., D.Sc., Honorary Consulting Physician to the Ministry; Sir Robert W. Philip, M.A., M.D., F.R.C.S., F.R.C.P., F.R.S., Honorary Consulting Physician in Tuberculosis to the Ministry.

University of Dublin.—At the recent honorary graduation in this University, the degree of LL.D. was conferred upon Sir Donald MacAlister, K.C.B., Principal of the University of Glasgow.

REVIEWS.

Rheumatism and Arthritis. By RALPH STOCKMAN, M.D. Edinburgh: Wm. Green & Son, Limited. 1920. (15s. net.)

THE medical profession in general, and the Glasgow school in particular, will welcome this volume by one so well qualified to deal with the subject. Part of the difficulty surrounding the "rheumatic" disorders has arisen from ambiguity in the nomenclature, and the author has taken pains, in copious historical notes, to trace the evolution of medical views on the subject from the time of Hippocrates.

The classification adopted is practical, and has been based on etiology as far as that has been ascertained. The morbid processes are fully described, and numerous photographs of patients, radiographs, pathological specimens, and microscopic sections constitute one of the prominent features of the book, and add much to its value.

It is difficult to single out one section for special mention where the whole is so worthy of merit, but attention might be drawn to the chapters containing descriptions of fibrositis and panniculitis, two allied conditions which should be more frequently recognised after a perusal of this book. Treatment of the various conditions is reviewed in the light of the writer's extensive experience, and much help is afforded in spite of the statement in the preface that "our treatment of most, if not all, of them, after several thousand years' experience is still unsatisfactory and leaves much to be desired."

The book is well printed, the illustrations (over 100 in number) are inset on art paper, and there is a comprehensive bibliography. To hospital physician and general practitioner alike this work can be strongly recommended.

Fractures, Compound Fractures, Dislocations, and their Treatment, with a Section on Amputations and Artificial Limbs. By John A. C. Macewen, M.B., C.M., B.Sc. Glasgow: MacLehose, Jackson & Co. 1919. (12s. 6d. net.)

This volume is of moderate size, and is designed to place before students and practitioners the essential facts concerning fractures and dislocations and their treatment. In perhaps few departments of surgery is there so great a diversity of methods of treatment as in the case of fractures. It may well be that this is due to the difficulty—we might almost say impossibility—of finding one method which gives all-round satisfactory results. Personally, we hold the belief that each case of fracture demands individual treatment, all treatments being based on certain well-founded principles. When these principles are kept steadfastly in view by the surgeon, there is little doubt that he soon evolves a line of treatment which gives satisfactory results. Meanwhile, however, the literature of the subject shows a welter of opinions: and we agree with Mr. Macewen that the student requires guidance in the selection of methods of treatment, even although such guidance merely shows forth the opinions of the individual teacher.

In the little book before us the first section deals with fractures in general, and begins with a description of the various forms and types, after which the different methods of treatment are briefly described, and hints given as to their applicability. Healing of fractures, the functions of the osteoblast, and the formation of new bone are also considered here. Individual fractures are next taken up, and the treatment appropriate to each is described. This is the part of the volume which will doubtless be most widely read by students, and we think that the author gives a very fair exposition of the subject. In the next section dislocations, generally and individually, are considered: and in Section IV there is an account of amputations and artificial limbs. This last is to be commended, as bringing before students the very important subject of the capabilities of stumps with regard to the patients' future usefulness. The author is to be congratulated on having produced so useful and readable a volume. It merits and will doubtless command a large circulation among those for whom it has been written. The various parts of the book are freely illustrated, there being 43 plates and 61 diagrams in the text. The printing is good, and quite in keeping with the traditions of the University Press.

A Manual of Gynæcology for Students and Practitioners. By SAMUEL J. CAMERON, M.B., B.Ch.Glasg., F.R.F.P.S.G. Second Edition, Revised. London: Edward Arnold. 1919. (25s. net.)

THE early appearance of the second edition of Dr. Cameron's *Manual of Gynæcology* shows that it is a book of considerable merit and a credit to the Glasgow school. Much of this edition has been rewritten, bringing it up to date, especially in regard to the action of the ductless glands. The first edition was beautifully illustrated, and many new illustrations have been added. These throughout reflect great credit on the author, the artist, and the publishers. Prolapse of the uterus is very fully dealt with. It is one of the most troublesome conditions with which a gynæcologist meets. The author generally treats this condition by the inter-position operation, which he frankly admits is not anatomically correct; but if it serves the purpose, that is the main thing. In his hands it has been very successful, but in the hands of other operators there have been failures and even fatal results, probably due to faulty technique, as Blair Bell has recently pointed out. The author also describes Fothergill's method of anterior colporrhaphy and amputation of the cervix in a single operation. In the cases he has done the results have been satisfactory. He has devised an operation for cure of prolapse after the menopause, where he amputates the cervix and grafts it into the perineal tissues. The perineum is repaired at the same time. He has performed this operation in eleven cases during the last two years with success. Anatomically the operation is unsound, but if it proves successful that is sufficient justification. If suppuration occurs the result will not be a success, but that is a matter of technique. We have pleasure in cordially recommending the book to students and specialists in gynæcology.

Diseases of the Ear in School Children. By JAMES KERR LOVE, M.D., F.R.F.P.S.G. Bristol: John Wright & Sons, Limited. 1919. (5s. 6d. net.)

THIS little book will prove of great value to those whose work lies in treating school children. In the early chapters the writer gives a detailed description of the arrangements for treatment of ear disease under the Glasgow School Board, and discusses the effects of the exanthemata, of enlarged tonsils, and of naso-pharyngeal adenoid hypertrophy. Syphilitic deafness in school children receives adequate attention, the value of the chapter being enhanced by some interesting family trees. A long chapter is devoted to hereditary deafness. By hereditary deafness the writer means "deaf-born offspring of deaf-born progenitors." This is a rather unfortunate definition, because the victims of hereditary deafness in the majority of cases do not usually become deaf until they reach the age of youth or adult life. The term hereditary deaf-mutism or hereditary congenital deafness might be a better term for the class of cases to which the author refers. The chapters on educational arrangements for teaching deaf children is very good, and should be of great assistance to teachers and others who have deaf children under their care. The medical treatment of school children is discussed in a short chapter, and is very much to the point. Towards the end of the book the author discusses the passing of deafness, and the means to be employed to eliminate deafness from the human race. To some, this may appear to be a "Dream out of the Ivory Gates," but that the number of sufferers from deafness can be very much diminished there is no doubt.

Diseases of the Throat, Nose, and Ear, for Practitioners and Students. By W. G. PORTER, M.B., B.Sc., F.R.C.S.Ed. Third Edition, fully Revised under the Editorship of A. LOGAN TURNER, M.D.Ed., F.R.C.S.Ed. Bristol: John Wright & Sons, Limited. 1919. (12s. 6d. net.)

WE welcome the third edition of this excellent little manual, which the student and practitioner will find invaluable. The whole field is covered, nothing of importance is omitted, and as we wrote of it in reviewing the first edition, it is a model of conciseness and accuracy. Major Porter, D.S.O., was killed in action in France in June, 1917, and now his friends and former colleagues have combined to re-issue the work, revising it and bringing it up to date under the editorship of Dr. Logan Turner. This has been well done, and we specially appreciate the revision of the section on the ear dealing with the functional examination of the ear, labyrinthine suppuration, and otosclerosis. On p. 268 there is a rather amusing misprint: "Indirect injury. Blows or falls on the *dead* may be followed by deafness."

Typhoid Fever, Considered as a Problem of Scientific Medicine. By FREDERICK P. GAY, Professor of Pathology in the University of California. New York: The Macmillan Company. 1918.

THIS volume contains much useful information on the subject with which it deals. The opening chapters give a condensed but comprehensive historical survey of the clinical, pathological, and bacteriological findings in typhoid fever. Mortality and disability statistics are quoted to argue the economic loss from typhoid, and a suitable diagram shows the typhoid incidence in the principal Continental and American cities in relation to water-supplies. Transmission of typhoid fever and susceptibility are discussed clearly and at some length, but the author has nothing new to add in this connection. There is an excellent chapter on pathogenesis, in which the importance of metastatic foci in gall-bladder and bone-marrow is emphasised.

The diagnosis is discussed, but, as the author points out in the preface, there is no attempt to make the book either a clinical or bacteriological manual. Laboratory diagnosis is, however, fairly fully dealt with, and the importance of early diagnosis by blood culture is pressed, especially in relation to prevention, since, as the author rightly points out, the greatest danger of dissemination is during the first two weeks, even although organisms may be more abundantly eliminated later. Under the subject of prevention the author deals with the treatment of carriers by vaccines, therapeutic and dietetic measures, concluding the chapter with a valuable summary of the various protective measures which should be employed.

Perhaps the best section of the book is that which deals with natural and acquired resistance. Vaccination is very fully discussed, and a strong case is made for the use of the sediment of alcoholic, killed, sensitised cultures, which have yielded, in the hands of the author and others, much better results than any other form of vaccine. The wider use of the easily applied typhoidin test is urged. There is strong evidence that a positive test is an indication of relative protection, but the author only insists that a negative test is an indication for revaccination.

Paratyphoidal injections are succinctly dealt with, and next the treatment of typhoid fever is discussed in considerable detail. A summary of the results obtained by the use of auto-serum-therapy and various specified immune sera is given. The combination of serum and vaccine therapy is alluded to as likely to yield good results, but the author's chief point is that intravenous sensitised vaccine therapy is at present the best method of combating the disease. The book concludes with a brief chapter on "Suggested methods of advance in solving the typhoid problem."

On the whole, the work is accurate and clearly expressed. It contains numerous suggestions which may prove valuable alike to the clinical pathologist and the physician. It is well worthy of perusal, as it gives in comparatively condensed form all the most recent work on the subject.

The Pituitary: A Study of the Morphology, Physiology, Pathology, and Surgical Treatment of the Pituitary, together with an Account of the Therapeutical Uses of the Extracts made from this Organ. By W. BLAIR BELL. London: Baillière, Tindall & Cox. 1919. (Price 30s. net.)

IN view of the "commanding position" which the pituitary body occupies in medicine, surgery, and gynæcology, the author has attempted here "to describe and discuss within a reasonable compass our present knowledge" regarding this interesting organ. His aim is to furnish a summary which will be of use to the clinician.

In Part I the morphology of the pituitary is dealt with in considerable detail. Its development from two different sources is carefully elaborated, as also its macro- and microscopical anatomy. A *résumé* of its comparative anatomy follows, tracing its characters from cyclostomata to mammalia.

Part II deals with the physiology of the organ. This subject is investigated in different ways, the first of which is histological. In this section the appearances during pregnancy, hibernation, and brooding (of hens) pass under review; and an attempt is made to determine the significance of the three different types of cell in the pars-anterior. Patho-physiological investigations are also considered here, and the section closes with a few notes on comparative physiology.

In Part III pituitary disorders and their treatment, medical and surgical, and in Part IV pituitary extracts and their therapeutical uses, are considered. Of the disorders, the chief are hyperpituitarism, characterised by acromegaly, and hypopituitarism with the curious syndrome of dystrophia adiposogenitalis. This part of the work, and the succeeding section on pituitary extracts, will be found most interesting to the clinician; but we would recommend the reader to peruse the earlier parts of the volume in order to appreciate properly the clinical sections.

The subject of the pituitary is at present far from having been completely worked out; and there are still observations which have not yet been correlated. The author has exerted himself to present these latter in some sequence, and to link them up as far as possible; but it can readily be understood that such a condition of affairs does not make easy reading. We think that the author would deserve the thanks of a large circle of clinical readers if he had furnished Parts I and II with a connected summary of the salient points in each. This would not in any way detract from the undoubted value of the monograph as a work of reference.

There is a profusion of illustrations—197 to 348 pages of text. In their present arrangement they not only break up the text, but necessitate throughout the book the employment of a highly glazed paper, with resultant discomfort to the reader's eyes. We venture to suggest that if the illustrations had been printed as plates and the text on a duller paper the volume would have been considerably improved. In these matters, however, author and publisher are entitled to their own views, and, after all, when, as in the present case, the matter is good, we are not disposed to be hypercritical.

Dr. Blair Bell deserves the thanks of his readers for having placed within their reach so good a statement of the present-day knowledge of this interesting and important subject.

Intravenous Injection in Wound Shock. By W. M. BAYLISS, M.A., D.Sc., F.R.S. London: Longmans, Green & Co. 1918. (9s. net.)

ONE of the most remarkable features of the mobilisation of every available talent and gift for war purposes was the prominent part played by chemists in elaborating antiseptic substances and poisonous gases, and by physiologists in elucidating the problems and disentangling the intracacies of surgical shock. Professor Bayliss, as Chairman of the "Special Committee for the Investigation of Surgical Shock and Allied Conditions, appointed by the Medical Research Committee, threw himself heartily into the investigation of wound shock, and the Oliver-Sharpey Lectures, now published in volume, contain the results of his work. The book cannot be too highly praised as a fascinating yet dispassionate statement of the problem of shock and the work done to meet it.

It will be observed that more definiteness is now to be found in terminology. Probably few words are more abused colloquially than "shock," and it is of importance that the term "wound shock" is here clearly stated to mean the state of depressed vitality and lowered function, which often follows hæmorrhage from any cause and the severe wounds of war or surgical operations.

We are not any nearer the exact knowledge of the primary cause, but we do know the conditions concomitant and many predisposing causes. Professor Bayliss, as is well known to those following the surgical literature of the war, has propounded a theory which is based on many observations and experiments, most of which are described in this book. Various chemical and nervous causes, along with hæmorrhage, combine to produce a state of prolonged low blood-pressure. Severe injury to muscle, especially in multiple wounds, produces toxins which have dilator action on capillaries, so that the big systemic circulation is emptied of blood and the capillaries are engorged. These toxic products already absorbed may be eliminated or destroyed if the blood pressure and volume of blood in circulation be raised. This can be accomplished by intravenous injections of blood, direct or citrated, or by a substance which is not likely to leave the circulation at once. Professor Bayliss ultimately hit upon 6 per cent gum acacia in physiological saline as the most efficient substitute for blood, and, indeed, as frequently superior to it. The success of the practical employment of this injection in France in cases suffering from wound shock or in impending shock is well known.

Theories of shock have been manifold, and this one in its turn may have to give place to others. However that may be, there can be no doubt as to the immense value of the scientific investigations carried out in formulating it, while its ready and successful adaptation to life-saving show how near to one another after all are the laboratory and the battlefield.

The Edinburgh School of Surgery before Lister. By ALEXANDER MILES. London: A. & C. Black, Limited. 1918. (5s. net.)

IN this little work, one of the "Medical History Manuals," Mr. Miles gives us a very brief sketch of the development of the Edinburgh School of Surgery from the days of the barber-surgeons to the period of Syme. The book comes at a time peculiarly appropriate, when the biography of Lord Lister has just made its appearance; and although the work under review is not intended to bear special relationship to Sir Rickman Godlee's, yet the two together make a very complete history of the pre-antiseptic and antiseptic eras as affecting Edinburgh.

While the author deals with the characteristics of a number of surgeons, the plan of his work allows only a passing glimpse of each. But even these short sketches are full of interest, and quite sufficient to complete the links in the chain of development of the Edinburgh School.

Mr. Miles does not confine his attention to the scientific attainments of his heroes, but gives us occasional illuminating peeps at their social propensities. The distinctly racy descriptions of the exploits of some of the "worthies" make not the least interesting and readable parts of the book.

The Edinburgh School of Surgery before Lister, we can safely predict, will, on its own merits, command a wide and rapid sale.

Transactions of the Thirty-Ninth Annual Meeting of the American Laryngological Association. New York: Published by the Association. 1917.

THE President's address is followed by an important paper on "Radium in the treatment of growths of the upper air passages," contributed by Bryson Delavan. It is based on 184 cases dealt with in the Memorial Hospital, New York City, an institution devoted to the study of cancer. Twelve per cent of the cases were believed to have completely retrogressed; 6·5 per cent were well a year after treatment had been begun; 43 per cent improved; and 43 per cent were unimproved. In the best cases the retrogression had been produced by a single treatment. In advanced cancer any temporary benefit from radium was usually overshadowed by the later progressive extension of the disease.

Considerable attention has of late been paid to general infection through the upper food and air passages. Physicians appear to attach more importance to the tonsils in this relation than laryngologists. The latter, however, as evidenced by contributions to this volume, are taking an increasing interest in the subject. Halsted writes on "General streptococcic infection through the accessory sinuses and the tonsil," and Loeb emphasises the importance of the complete enucleation of the tonsils in this connection.

Perhaps the most valuable part of these *Transactions* is the report of the Committee representing the leading Otological and Laryngological Societies of America to the Council of National Defence. In this are embodied a number of suggestions as to the examination of recruits; the organisation of "head hospitals" for the treatment of injuries of the eye, ear, nose and throat; the appointment of the staff of such hospitals, each of which, it is recommended, should include one brain surgeon and four assistants, one chief ophthalmic surgeon and two assistants, one chief nose and throat surgeon and four assistants, and have the co-operation of pathologists, roentgenologists and neurologists attached to the general hospital. In the subsequent discussion we note the same complaints as were so often heard in this country of highly-trained specialists being assigned duties so far removed from their specialty that they knew nothing about them.

On Gunshot Injuries to the Blood-Vessels. By GEORGE HENRY MAKINS, G.C.M.G., C.B. Bristol: John Wright & Sons, Limited. 1919. (21s. net.)

THE great war has given an unusual opportunity for research on the subject of the surgery of the blood-vessels. This monograph is the outcome of the opportunity accepted, and expresses throughout the scientific way in which the research has been accomplished. Statistics show the recurring incidence of damage in many vessels to be peculiar in locality, and the anatomical deductions to account theoretically for these vulnerable spots are fresh. To the pathologist, interesting reading is offered, accompanied by excellent illustrating photographs and coloured plates. The clinician and the physiologist are provided for. The ordinary clinical features of aneurysm are now an old story, but the wealth of material, so efficiently worked up, has brought other features to light, such as the value of a bruit and the direction of its conduction in localising a lesion to smaller vessels, and the conduction to the precordial area of a distant aneurysm bruit, which, according to the author, is seldom wanting. Such a murmur in the precordial area was found to be a tell-tale of a latent lesion to a vessel at a distance. The physiological problems are difficult of association, since the vascular lesions of war injuries are rarely isolated. Treatment is a prominent interest to the operating surgeon. The author's practice varies with the vessel injured, procedure being influenced by the anatomy of the vessels in the region. It also varies in the same vessel with the duration of the lesion, the local clinical features, and the general condition of the patient. The decisions here are the outcome of experience of the disasters which anyone fears when called upon to deal with the main blood-supply of a part. The book is a well-written, fascinating study, and a splendid guide to the operating surgeon.

Sterility in Women. By ARTHUR E. GILES, M.D., B.Sc.Lond. London: Henry Frowde and Hodder & Stoughton. 1919. (10s. net.)

STERILITY in women has always been a very important subject, and at the present time its importance has greatly increased. It is a considerable time since a book on this subject has appeared in this country, and we welcome this one most heartily. The author deals with the various causes, and furnishes many tables of statistics. Among authors there seems to be an extraordinary diversity of opinion as to the responsibility of the male for childless marriages, as the percentages range from 10 to 90. The latter percentage is given by Moeggerath, who "is apparently obsessed by the idea that gonorrhœa is the one important factor in the causation of sterility." No doubt the husband is at fault in a considerable proportion of cases (varying between 10 and 50 per cent), and in doubtful cases the author points out the importance of obtaining definite evidence that the husband is healthy before submitting the woman to operative procedure.

In the statistics regarding sterile marriages there is also a wide range from 2 to 20·5 per cent. The author's conclusion is that Simpson's estimate, made on a census of Grangemouth and Bathgate, is nearest the truth, 10·9 per cent for the working population, and he also accepts Simpson's estimate of 16·3 per cent among the leisured class.

The author deals shortly with the determination of sex, and disposes of the absurd theory that the right ovary produces males, and the left ovary females, by giving 25 cases where one ovary was removed and 33 children were born afterwards—8 boys from the remaining right ovary and 10 from the left ovary, 8 girls from the right ovary and 7 girls from the left ovary. It is amusing to note that this so-called new theory brought forward by Dawson in 1900 A.D. was propounded in 500 B.C. by Anaxagoras.

The methods of treatment are well dealt with, and at the end of the book there is a very full bibliography from 1734 onwards. We cordially commend the book.

Injuries to the Head and Neck. By H. LAWSON WHALE, M.D.Camb., F.R.C.S.Eng. London: Baillière, Tindall & Cox. 1919. (15s. net.)

AN outstanding feature of this volume is the author's experience of extensive war injuries of a nature and in situations not common in ordinary times. The opening chapter discusses the well-known worries of hæmorrhage, particularly secondary hæmorrhage occurring in septic wounds, and gives the author's technique for the transfusion of blood. The use of the telephone probe in the extraction of foreign bodies receives sanction. Provided removal is necessary, it is a refinement of doubtful use even when resorted to on the rare occasions when an attempt by simpler means fails. Everyone who has removed a deeply situated piece of metal knows how closely the immediate tissues hug it, and that they must be divided to permit removal. With the telephone probe, the final difficulty is to get contact with the metal. Works dealing with the surgery of the salivary glands emphasise the persistence of parotid fistula and the difficulty of closure. The author concludes, from his frequent experience of them during the war, that they are easily dealt with, and describes the simple operative procedure with which he has always been successful. The sections dealing with injuries to the œsophagus, respiratory tract, mediastinum, face, mouth, and jaws inscribe the most valuable portion of the book. The author submits many well illustrated detailed records of the progressive and modified treatment of cases, advancing a department of surgery which, in civil practice, is lacking in continuous opportunity. These are cases which tax the patience and ingenuity of the surgeon, and the illustrations here presented convey evidence of the author's reward by results worthy of appreciation.

Fractured Femurs: Their Treatment by Calliper Extension. By MAURICE G. PEARSON, O.B.E., M.B., B.Sc.Lond., F.R.C.S., Brevet Lieut.-Colonel, South African Medical Corps, and J. DRUMMOND, M.D., M.R.C.P.Edin., Captain, South African Medical Corps. London: Henry Frowde and Hodder & Stoughton. 1919. (10s. 6d. net.)

IN a "foreword" Sir H. M. W. Gray draws attention to the necessity for improvement in the teaching of the principles of the treatment of fractures. He thinks that the results obtained by experts in the treatment of serious war injuries show that by careful attention the frequent deformities and incapacity which follow many fractures in civil life may be prevented. In conclusion, he commends to the notice of surgeons all over the world the statements and teaching of the authors of the book now before us.

The volume is by no means a bulky one—it consists of some eighty pages, and when allowance is made for the space occupied by illustrations, of which there are fifty in the text, it will be understood that even the busiest surgeon will have time to make himself familiar with the substance of the book.

Put briefly, the authors advocate careful extension, and to this end they employ an instrument on the pattern of the ice-tongs: this should be so applied that the bone is not pierced. For splinting they use Thomas's splint, and by its means they obtain counter-extension.

Full details are given for the treatment of fractures at various levels in the bone, and also as regards the carrying out of early movement with the object of avoiding joint-stiffness.

The text is well illustrated by many figures, which show not only the method of treatment, but some of the results obtainable by it.

The volume is well printed and handsomely turned out, and we cordially endorse Sir Henry Gray's recommendation to all surgeons to familiarise themselves with the teaching which it sets forth.

The Simple Carbohydrates and Glucosides. By E. F. Armstrong, D.Sc., Ph.D., F.I.C. Third edition. London: Longmans, Green & Co. 1919. (12s. net.)

This is another of the monographs on biochemistry which has won for itself a very definite position. A new edition is particularly welcome at the present moment when so many advances are taking place in the chemistry of the carbohydrates and allied substances. Probably no other set of compounds offer such an exceptional insight into the very obscure region of the influence of structure on the properties of the molecule—a field in which a Glasgow-trained chemist, Professor J. C. Irvine, has played a most notable and distinguished part. This small volume gives a very comprehensive and relatively simple survey of the subject.

Organic Chemistry for Students of Medicine. By James Walker, LL.D., F.R.S. Second edition. London: Gurney & Jackson. 1919. (10s. 6d. net.)

A good book—well arranged, well written, well printed, and free from padding. It is recommended for its purpose. The subject is dealt with in sufficient fulness for any ordinary student or practitioner of medicine, and the book can be used by such readers not only as a text-book but also to a considerable extent as a work of reference about those organic substances which are of special interest in medicine. It does not, of course, aspire to be regarded as a text-book on the subject of organic chemistry in general. At the beginning some facts are given regarding purification of organic substances, determination of melting- and boiling-points, ultimate organic analysis, determination of molecular weights, and valency and graphic formulæ. Then, beginning with methane and its derivatives, the various general groups of organic substances are dealt with one after the other in a systematic way. Homologous series, isomerism and stereo-isomerism are clearly explained. Organic drugs, natural and synthetic, are mentioned shortly and clearly, and so are the various constituents of the animal body, its foods and its excretions. Dyes, stains, and indicators form a very short, final group. There are in all over 300 pages, and a good index is added.

Dementia Præcox and Paraphrenia. By Professor EMIL KRAEPELIN, of Munich. Translated by R. MARY BARCLAY, M.A., M.B., and Edited by Professor GEORGE M. ROBERTSON, M.D. Edinburgh: E. & S. Livingstone. 1919. (15s. net.)

THIS book is a translation of the section on dementia præcox from the eighth German edition of Kraepelin's well-known *Text-Book of Psychiatry.* In 1896, when Kraepelin formulated his views on dementia præcox, and made an attempt to differentiate it from various other types of mental disorder, especially manic-depressive insanity, much opposition was aroused, and great interest was stimulated. Since that time Kraepelin's views have gained rather than lost ground, his classification has been more or less generally adopted, and his main contention that cases of dementia præcox tend to run a chronic course and lead to a progressive mental deterioration has been for the most part upheld. Kraepelin at first contented himself with describing three main types of dementia præcox—the hebephrenic, the catatonic, and the paranoid—and later he added a fourth type, which he termed dementia præcox simplex. In the last edition of his text-book he has gone a step further, and has described a great many other types, called, for instance, delusional-depressive dementia præcox, the circular type, the periodic type, &c. The consequence is that, in the reviewer's opinion, the picture of the disorder has become clouded rather than clarified, in consequence of the fact that all these smaller groups have many symptoms in common, and no special group of symptoms stands out prominently. In other words, the tendency has been to over-emphasise the symptomatological picture, and the character and constitution of the individual in whom the disease process develops has been rather neglected; this, of course, is natural enough, seeing that Kraepelin believes that dementia præcox is due to an auto-intoxication as a consequence of a disorder of metabolism. The most unsatisfactory chapter in the book is the one on treatment. Under the term paraphrenia, the symptomatic description is given of these cases which show a paranoid trend, but which do not show the emotional and volitional deterioration present in cases of dementia præcox. Kraepelin's descriptions are detailed and excellent, but the great thing lacking is the fact that no special attempt is made to analyse and understand the nature of the disorder. Our best thanks are, however, due to the translator and editor of this book for making Kraepelin's views so readily accessible to English readers.

Diseases of Women. By TEN TEACHERS. Under the direction of COMYNS BERKELEY, M.A., M.D., M.C.Cantab., F.R.C.P.Lond. Edited by COMYNS BERKELEY, H. RUSSELL ANDREWS, J. S. FAIRBAIRN. London: Edward Arnold. 1919. (30s. net.)

THIS book is a companion one to *Midwifery* by the same ten teachers. Collective authorship is never very satisfactory, but to overcome the difficulties of differences of opinion on various subjects the whole corps has revised the entire book, both text and illustrations, and the result has been very satisfactory. The subject is also discussed from the point of view of State medicine, and a *prècis* of the report of the Royal Commission on Venereal Disease has been included. There is also an interesting chapter on neurasthenia. Extra-uterine pregnancies are very fully dealt with, including the rarer forms.

The book is very clearly written, and is well illustrated. As the authors are all examiners, the book will be most useful for London medical students, but we cordially commend it to others as well.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

EDITED BY GEORGE MACINTYRE.

MEDICINE.

Transfusion of Blood in Cases of Pernicious Anæmia.—In the *Edinburgh Medical Journal*, May, 1920, Mr. James M. Graham gives results he has obtained in 23 cases of pernicious anæmia by transfusion of blood. He finds that this method of treatment is of considerable value in cases of pernicious anæmia that have failed to respond to all the usual medical measures. It may alleviate but cannot cure such cases. The best results were obtained by indirect transfusion from vein to vein. The use of anticoagulating substances he considers undesirable. A large amount of blood is unnecessary, and repetition of transfusion may be required. If preliminary tests are made to exclude hæmolysis the risks are small.—DOUGLAS K. ADAMS.

SURGERY.

Intestinal Obstruction from Tuberculous Peritonitis (*Revue de Chirurgie*, No. 3, 1920).—Dr. A. Aimes reviews this subject in thorough fashion in this paper. He notes that children and young adults are most frequently affected; and that females are oftener attacked than males. Obstruction by bands, by adhesion, and by intestinal paralysis are studied; and he finds that bands occur in the cases he reviews oftener than the other factors above named. Adhesions as cause are more difficult to deal with at operations, but he reports two cases where Morestin by a simple laparotomy on each occasion obtained a favourable result. His researches indicate (contrary to the opinion commonly held) that the acute form of obstruction due to peritoneal tuberculosis is more frequent than the chronic—42 acute cases against 22.

Diagnosis is discussed, but it is concluded that even with the abdomen open, different mechanisms of obstruction are so frequently associated in tuberculous peritonitis that it is difficult at times to lay the blame at the door of the chief evil-doer.

He reviews the various operative procedures; and in view of a mortality of 63 per cent, he concludes that interference should be reduced to a minimum. As regards operation, first, decide if the tuberculosis is healed or in evolution. If obstruction appears to be single and tuberculosis not active, relieve obstruction; but think of other possible obstructions and explore cavity with care. If obstruction exists in the presence of an active peritoneal tuberculosis, Dr. Aimes thinks we must not altogether reject the idea of artificial anus. The claims of this operation and of laparatomy must be balanced by surgeon. In cases where paralysis of gut is present, the spasm may pass on exposure of gut to the air. If not, then gentle pressure on wall of intestine may be employed to propel contents past obstruction; but the author prefers lavage with ether or warm saline. Where bands and adhesions exist together, either resection or anastomosis has to be chosen. With adhesions alone present (from a survey of his cases) he counsels an entero-anastomosis as giving the best results.

On the whole, Dr. Aimes thinks that in cases of obstruction of gut due to intestinal tuberculosis, surgery is far from being baffled; and intervention may give good results, even in apparently unfavourable cases.

—JOHN MACINTYRE.

Possibilities of Carrel-Dakin Technique in Civil Life (*Boston Medical and Surgical Journal*, 12th February, 1920).—In this article Dr. Allen G. Rice, who had studied the method above named in France during the war at the Rockfeller Institute at Compiégne, and on the field, details his difficulties in introducing it into a civil hospital, and gives cases illustrating the wonderful results to be obtained when the technique is properly carried out. "Members of the staff had experimented with a spurious Dakin's solution. . . . Unfamiliar with the Carrel technique, each surgeon had individually evolved his own from a perusal of the literature, and from his past surgical experience." As a result, "the method was for the most part scrapped as a fad. Not a few men openly voiced their disgust with it, and frankly condemned it at every opportunity." Dr. Rice, however, was fortunate in having an open-minded hospital superintendent and seniors who swept difficulties out of his way; and before long got a perfect solution made, and was provided with opportunities for working with it. The results he gives bear out the present writer's conclusions, *i.e.*, that for septic conditions (and especially those of bone) the Carrel-Dakin method is the biggest advance in antisepsis since the days of Lister. (1) An elbow wound—compound fracture-dislocation—with disintegration of the joint and two discharging sinuses, was operated on two years after the injury, and Carrel-Dakin treatment applied; it granulated cleanly and was healed completely in three months' time. (2) A comminuted fracture (compound) of both leg bones above ankle, involving tibio-tarsal articulation, remained infected, with discharging sinuses, for two years. Four times in two years the lesion was operated. The last operation, the fifth, was followed by Carrel-Dakin treatment, and in three months' time the wound was entirely healed for the first time. The other cases cited are records of similar victories.

What is of interest, however, in this paper is not the list of successes in treatment. That is familiar enough to those who have practical knowledge of this method. The outstanding fact is that Americans are quite as hide-bound as British in surgical ritual after all. One was prepared to wait ten years before British surgeons, as a whole, accepted the Dakin hypochlorites at their true value; but the American surgical staff in France had such innumerable opportunities for gaining experience of the method that this story of the reactionary spirit in American civil hospitals comes with something of a shock. *Plus ça change, plus c'est la même chose.* . . . JOHN MACINTYRE.

OBSTETRICS AND GYNÆCOLOGY.

Tuberculosis of the Vulva (*Dublin Journal of Medical Science*).—Dr. Solomons describes a case of tuberculosis of the vulva in a patient aged 36 years. She was married at the age of 23 and had one child five years after marriage. The labour was normal, but the puerperium stormy. A swelling in the vulva appeared about three months after baby was born. The swelling increased for about three months, thereafter remaining stationary despite a variety of treatment from many doctors. She complained of discomfort from the weight of the swelling and from itchiness, also dyspareunia and difficulty in walking. The family history revealed the fact that her mother had died of phthisis. The patient showed no sign of tuberculosis elsewhere, while the blood and urine were normal and the Wassermann test negative. The appearance of the vulva was typical of a marked œdema without pitting: the clitoris, labia majora, and minora were involved in their whole extent; the inguinal glands were not involved, and the tubes seemed healthy on bimanual examination.

A piece of the mass was excised and the pathologist's report tallied with the usual description of tuberculosis, though no tubercles were discovered. Dr. Solomons removed the vulva, and tubercles were found in another portion of the tumour.

Tuberculosis of the vulva is rare, and this form is rarer still. Dr. Solomons has had difficulty in placing this type under the correct nomenclature, but suggests it conforms to "lupus tumidus," which is described as a form of tuberculosis characterised by subcutaneous infiltration and doughy swelling.

—JAMES H. MARTIN.

Diffuse Virginal Hypertrophy of Breasts (*Dublin Journal of Medical Science*).—The patient, aged 16 years, was admitted to the Richmond Hospital, Dublin, under Mr. Dwyer's care, complaining of the inconvenience caused by the enormous size of her breasts. Until menstruation began at the age of thirteen her breasts were normal in size, but with the onset of menstruation the breasts gradually increased in size. Both breasts were amputated; the right weighed 2½ kilogrammes and the left breast 3 kilogrammes. Histological examination showed a fibro-adenomatous condition with a small amount of cellular infiltration in the neighbourhood of some of the gland acini.

—JAMES H. MARTIN.

Books, Pamphlets, &c., Received.

Rheumatism and Arthritis, by Ralph Stockman, M.D. Edinburgh : W. Green & Son, Limited. 1920. (15s. net.)

Handbook of Diseases of the Nose, Throat, and Ear, for Students and Practitioners, by W. S. Syme, M.D., F.R.F.P. & S.G,, F.R.S.E. Edinburgh : E. & S. Livingstone. 1920. (9s. net.)

The Treatment of Neuroses, by Ernest Jones, M.D.Lond., M.R.C.P.Lond. London : Baillière, Tindall & Cox. 1920. (10s. 6d. net.)

The New Physiology in Surgical and General Practice, by A. Rendle Short, M.D., B.S., B.Sc.Lond., F.R.C.S.Eng. Fourth edition, revised and enlarged. Bristol : John Wright & Sons, Limited. 1920. (Cloth, 9s. 6d. net ; paper covers, 7s. 6d. net.)

A Manual of Neurasthenia (Nervous Exhaustion), by Ivo Geikie Cobb, M.D., M.R.C.S. London : Baillière, Tindall & Cox. 1920. (12s. 6d. net.)

Aids to Electro-Therapeutics, by J. Magnus Redding, F.R.C.S. London : Baillière, Tindall & Cox. 1920. (5s. net.)

Surface Anatomy, by Charles R. Whittaker, F.R.C.S.Ed., F.R.S.E. Third edition, revised and enlarged. With 17 plates (comprising 27 figures). London : J. & A. Churchill. 1920. (7s. 6d. net.)

Practical Tropical Sanitation : A Pocket Book for Sanitary Inspectors in the Tropics, by E. P. Minett, M.D., D.P.H. London : Baillière, Tindall & Cox. 1920. (4s. 6d. net.)

Diathermy in Medical and Surgical Practice, by Claude Saberton, M.D. Illustrated. London : Cassell & Co., Limited. 1920. (7s. 6d. net.)

The Sexual Disabilities of Man, and their Treatment and Prevention, by Arthur Cooper. Fourth edition, revised and enlarged. London : H. K. Lewis & Co., Limited. 1920. (7s. 6d. net.)

Dr. G. Herschell's Textbook of Indigestion, revised and rewritten by Adolphe Abrahams, O.B.E., M.D.Camb., M.R.C.P.Lond. Fourth edition. London : Edward Arnold. 1920. (10s. 6d. net.)

Advice to Consumptives : Home Treatment, After-Care, and Prevention, by Noel Dean Bardswell, M.V.O., M.D,, F.R.C.P. Foreword by the late C. Theodore Williams, M.V.O., M.D., F.R.C.P. Second edition. London : A. & C. Black, Limited. 1920. (3s. 6d. net.)

Tuberculosis and Public Health, by H. Hyslop Thomson, M.D., D.P.H. London : Longmans, Green & Co. 1920. (5s. net.)

An Index of Symptoms with Diagnostic Methods, by Ralph Winnington Leftwich, M.D. Seventh edition, revised by H. N. Warner Collins, B.Sc., M.R.C.S., L.R.C.P. London : John Murray. 1920. (15s. net.)

Military Psychiatry in Peace and War, by C. Stanford Read, M.D.Lond. With 2 charts. London : H. K. Lewis & Co., Limited. 1920. (10s. 6d. net.)

Le Sympathique et les Systèmes associés. Par A.-C. Guillaume. Préface du Prof. Pierre Marie. Paris : Masson et Cie. 1920. (6·50 fr. net.)

Traité de l'Immunité dans les Maladies Infectieuses, par Dr. Jules Bordet. Paris : Masson et Cie. 1920. (40 fr. net.)

La Tension Artérielle en Clinique, sa Mesure, sa Valeur Sémeiologique, par le Dr. L. Gallavardin. Deuxiéme édition, 200 figures. Paris : Masson et Cie. 1920. (30 fr. net.)

Surgical Anatomy. Part I, second edition, by C. R. Whittaker, F.R.C.S.Ed., F.R.S.E. Catechism Series. Edinburgh : E. & S. Livingstone. (1s. 9d. net.)

Operative Surgery : A Companion Volume to "A Manual of Surgery." Vols. I and II, by Alexis Thomson, F.R.C.S.Ed., and Alexander Miles, F.R.C.S.Ed. Third edition. With 279 illustrations. London : Henry Frowde and Hodder & Stoughton. 1920. (16s. net.)

The Mental Hygiene of Childhood, by William A. White. Mind and Health Series. London : William Heinemann. (6s. net.)

A Handbook of British Mosquitoes, by William Dickson Lang, M.A., Sc.D. London : Printed by Order of the Trustees of the British Museum. 1920. (20s. net.)

The House-Fly : Its Life-History and Practical Measures for its Suppression, by Major E. E. Austen, D.S.O. London : Printed by Order of the Trustees of the British Museum. 1920. (1s. 6d. net.)

The Doctor's Manual, or Practitioner's Vade Mecum, with which is incorporated "How to Cut the Drug Bill," by A. Herbert Hart, M.S. Fourth or post-bellum edition. London : John Bale, Sons & Danielsson, Limited. 1920. (10s. 6d. net.)

The Industrial Clinic : A Handbook dealing with Health in Work, by several writers, edited by Edgar L. Collis, M.D.Oxon., M.R.C.P. London : John Bale, Sons & Danielsson, Limited. 1920. (10s. 6d. net.)

Backwaters of Lethe (some Anæsthetic Notions), by G. A. H. Barton, M.D. With illustrations. London : H. K. Lewis & Co., Limited. 1920.

The Systematic Treatment of Gonorrhœa in the Male, by Norman Lumb, O.B.E. Second edition. London : H. K. Lewis & Co., Limited. 1920. (5s. net.)

Public Health Laboratory Work (Chemistry), by Henry R. Kenwood, C.M.G., M.B., F.R.S.Ed., D.P.H., F.C.S. Seventh edition, with illustrations. London : H. K. Lewis & Co., Limited. 1920. (15s. net.)

The Medical Annual : A Year-Book of Treatment and Practitioner's Index. 1920—38th year. Bristol : John Wright & Sons, Limited. (15s. net.)

Malaria at Home and Abroad, by S. P. James, M.D., D.P.H. Illustrated with coloured map and 104 full-page and text figures. London : John Bale, Sons & Danielsson, Limited. 1920. (25s. net.)

Anatomy, Descriptive and Applied, by Henry Gray, F.R.S., F.R.C.S. Twenty-first edition, edited by Robert Howden, M.A., M.B., D.Sc. Notes on Applied Anatomy, revised by A. J. Jex-Blake, M.A., M.D.Oxon., F.R.C.P.Lond., and John Clay, C.B.E., M.B., F.R.C.S. With 1,215 illustrations, of which 568 are coloured. London : Longmans, Green & Co. 1920. (42s. net.)

GLASGOW.—METEOROLOGICAL AND VITAL STATISTICS FOR THE FIVE WEEKS ENDED 31st JULY, 1920.

	Week ending				
	July 3.	July 10.	July 17.	July 24	July 31.
Mean temperature, . .	55·4°	55·5°	57·0°	56·3°	53·9°
Amount of rainfall, . ins.	1·98	1·17	0·46	0·34	0·82
Deaths (corrected), . .	254	227	268	274	235
Death-rates, ...	11·9	10·6	12·6	12·8	11·0
Zymotic death-rates, . .	0·8	0·9	0·4	0·8	0·6
Pulmonary death-rates, .	2·8	1·9	2·4	2·1	2·2
Deaths—					
Under 1 year, . . .	51	30	56	55	32
60 years and upwards, .	77	66	73	91	67
Deaths from—					
Small-pox, . . .	3	1	4	9	13
Measles, ...	5	6	1	2	1
Scarlet fever, . . .	...	1	1	..	2
Diphtheria, . . .	2	1	...	2	1
Whooping-cough, . .	2	2	3	1	2
Enteric fever, . . .	...	1	..	1	...
Typhus, ...	...	...	...	...	...
Cerebro-spinal fever, . .	1	1	1	...	1
Diarrhœa (under 2 years of age),	9	8	4	11	6
Bronchitis, pneumonia, and pleurisy, . . .	36	28	37	30	28
Cases reported—					
Small-pox, ...	8	40	15	19	36
Cerebro-spinal meningitis, .	3	1	1	1	5
Diphtheria and membranous croup, ...	19	33	21	35	22
Erysipelas, . . .	9	14	17	13	16
Scarlet fever, . . .	46	46	47	36	47
Typhus fever, . . .	...	...	...	...	...
Enteric fever, . . .	8	1	1	3	2
Phthisis, ...	36	28	31	38	36
Puerperal fever, . .	4	4	1	3	3
Measles,*	103	34	30	21	16
Ophthalmia neonatorum, .	5	13	9	10	20

* Measles not notifiable

Sanitary Chambers,
Glasgow, 4th August, 1920.

THE

GLASGOW MEDICAL JOURNAL.

No. III. SEPTEMBER, 1920.

ORIGINAL ARTICLES.

PRACTICAL POINTS IN THE DIAGNOSIS OF PULMONARY TUBERCULOSIS, WITH SPECIAL REFERENCE TO INSPECTION.*

By JAMES CROCKET, M.D., D.P.H.,
Lecturer on Tuberculosis, Glasgow University; Medical Superintendent,
Consumption Sanatoria of Scotland, Bridge of Weir.

THE importance of our subject is unquestionable. In spite of the fact that for many years direct and more or less organised effort has been made to counteract its effects, the tubercle bacillus is still the cause of more suffering and death than any other organism. In this country alone over 70,000 persons are carried off by it every year. One in every three who die between the ages of fifteen and thirty-five dies of tuberculosis. These deaths do not occur because like pneumonic plague or cholera it is very resistant to any effort made to overcome it. On the other hand, few diseases are more amenable to control, and none of the more serious causations of sickness and of death is more frequently cured. Gideon Harvey in 1672 in his *Morbus*

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* Address delivered before the Queen Margaret College Medical Society.

Angelicus said, "It is a great chance we find to arrive at one's grave in this English climate without a smack of consumption, death's direct door to most hard students, divines, physicians, philosophers, deep lovers, and zealots in religion." What was true in 1672 and before is no less true to-day. Naegeli, working in Professor Ribbert's Institute in Zurich, found tuberculosis present in 97 per cent of the bodies of adults which he examined. It must be admitted that to find it sections had to be made often of every organ of the body, and that the disease was found particularly in the lymphatic glands; nevertheless, it was found. His work has been repeated by Oskar Müller, Burkhart, Hamburger, von Pirquet, and many others. Although practically 100 per cent of the adult population thus are infected, over 90 per cent are cured, or at least succumb eventually to some other disease. These cures take place in a very large percentage of the cases spontaneously and without the disease being suspected. Even of those who give definite and indubitable symptoms of the disease, reliable statistics show that over 50 per cent are in good condition, well, and working five years after the onset of these symptoms. Over the portals of the physician's diagnosis of tuberculosis there therefore need not be inscribed "All hope abandon ye who have entered here." Once tuberculous, till death always tuberculous, is by no means true.

The fact of this universality of infection should not on any account lead us to deal lightly with the condition when diagnosed. The majority of those numerous cures referred to take place in the incipient stage. When the symptomatology is such as to make the diagnosis of the condition unquestionable, too often the disease is not really in an early, but in a well advanced condition. Diagnosis should always be followed by firm, and if necessary, radical treatment. If the disease proceeds beyond a certain stage, improvement alone, and not cure, can be expected from any measures adopted, and only too often, alas, not even that, but merely the relief of symptoms.

How can tuberculosis most certainly be diagnosed? Apart from the discovery of the tubercle bacillus in the sputum, there is no royal road to the diagnosis of this condition. Many diagnostic methods may require to be resorted to before, with certainty, one can say that the disease is there, and that it is the cause of the symptoms which manifest themselves.

I would like to-night, while not depreciating the value of any other methods, to emphasise the importance of inspection in the diagnosis of this condition. It is certainly a great mistake when one gets a suspected case to fly to the stethoscope, to *x*-rays, to the sphygmomanometer, or to the various techniques of the laboratory. Their value later in the examination may be invaluable. If utilised at the beginning they may confuse and mislead. A fact emphasised by Cotton over seventy years ago should not be forgotten, and that is, that consumption, although

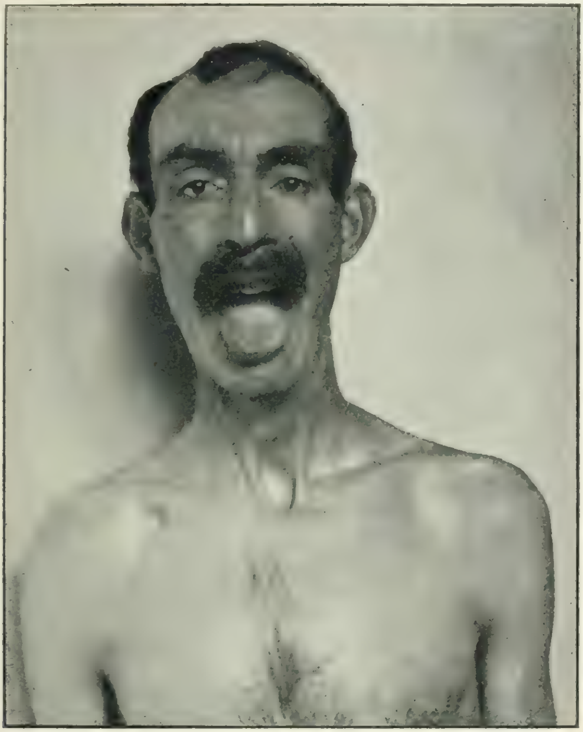

FIG. 1.

J. McD. This patient had chronic phthisis. Both lungs involved. Disease especially active on the right side. *Note.*—1. Thin, dry hair. 2. Prominent ears, especially the left. 3. Bushy eyebrows. 4. Difference in size of palpebral apertures. 5. Direction of tongue. 6. Angularity of neck. Lower angle on right side of neck. 7. Spasm of sterno-mastoids—specially right. 8. Prominence of Morenheim's fossæ. 9. Flattening of both shoulders.

well advanced, may not be discoverable by a physical examination of the chest. The practised eye and the carefully applied hand may give more information in the diagnosis of tuberculosis than the use of any of the more modern methods of diagnostic technique. The trouble with most doctors, Corrigen used to say, is not that they don't know enough, but that they don't see enough. It is possible to go round the patients in a sanatorium such as that at Bridge of Weir, and by merely looking at each patient, and occasionally applying the hand, to tell five things:—

1. Whether or not that patient has tuberculosis.
2. Whether, if that disease be present, it is acute or chronic, old-standing or recent.
3. How far the disease has advanced.
4. The degree to which it is incapacitating the patient for work.
5. The probable prognosis.

It is true that one's conclusions may not always be correct; further examination may give further light which will alter one's opinions. In a remarkably large percentage of the cases, however, the opinions thus formed are correct, and are little changed by further observations.

Let us suppose that we have before us a patient supposed to be suffering from tuberculosis. What is it that we look for that will tell us of its presence or absence; its activity or quiescence; its acuteness or chronicity? We have a definite routine which we always follow at the sanatorium preliminary to other methods of examination. It is of the utmost value. Let me go over it with you. Such a routine religiously followed in every case prevents anything being inadvertently missed, and takes a very little time. Recollecting the general nature of tuberculosis — the fact that although the lesion may be localised, it manifests itself by secondary changes in every organ of the body; in fact, in every tissue, either through the toxins or reflexly through the nerve supply, one therefore looks at, and when necessary, feels as much as one conveniently can external to the chest before examining that.

First, we look at the hands, paying special attention to the fingers. Two types are found in tuberculosis—the one where the ends of the fingers are clubbed, the other where they are long and thin and tapering. The curvature of the nails is accentuated, not only laterally but longitudinally. The nails tend to curve down over the ends of the fingers. It is said that the nails take seven months to grow. Certainly during the period of a patient's residence in the sanatorium, one has noticed changes such as I have described take place. Clubbing, of course, is also obtained in many other conditions, particularly emphysema, valvular disease of the heart, and congenital heart disease: any condition producing embarrassment of the venous intra-pulmonary circulation may give it. Extreme forms of clubbing, approximating to pulmonary hypertrophic osteo-arthropathy are found. That is more suggestive of bronchiectasis

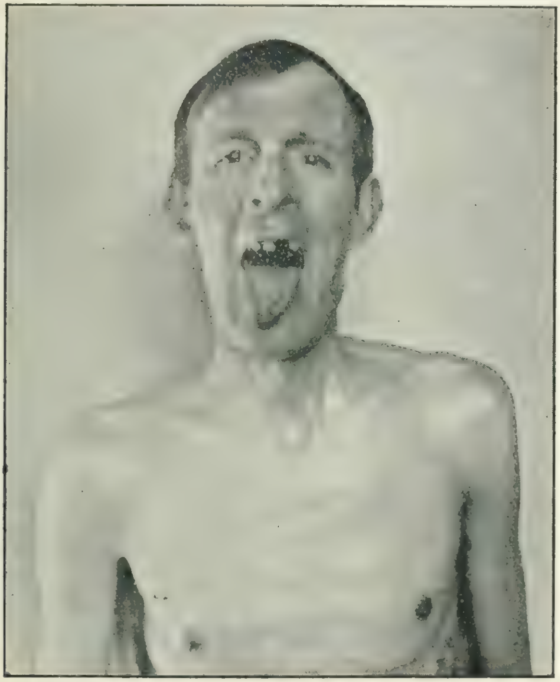

FIG. 2.

T. S. This patient had chronic phthisis; the left side was chiefly affected. There was scattered active disease on the right. *Note.*—1. The thin, dry hair. 2. Prominence of ears, especially the left. 3. Tongue directed to the right. 4. Angularity of neck. 5. Spasm of sterno-mastoids. 6. Falling in of the right chest and lowering of nipple.

and lung abscess than simple phthisis. The colour of the nails is interesting and important. They are, in cases that are resisting the disease, usually normal in shade or somewhat pale. In those cases which are toxic, they are rather a deep pink in colour. In cases where there is respiratory embarrassment on account of rapidly advancing disease or advanced lung involvement, they are blue and cyanotic. The feel of the hands also is characteristic. Usually they are cold and clammy. Sometimes they are hot and moist.

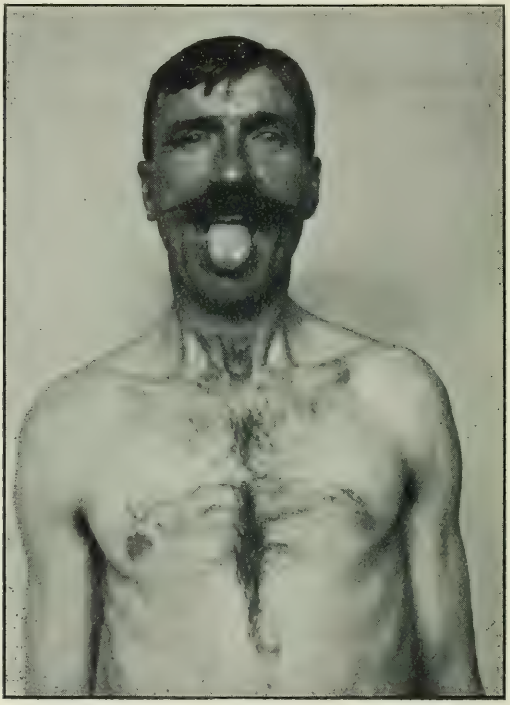

FIG. 3.

H. McK. This patient suffers from chronic tuberculosis. It is specially marked on the left side of the chest. There is also some infiltration of the upper lobe of the right side. *Note.*—1. Hands—clubbing and abnormal curvature of nails. 2. Hair—dry, thin, and brittle. 3. Smaller palpebral fissure on the right side. 4. Highly arched and bushy eyebrows. 5. Tongue pointed to the right. 6. Angularity of neck. 7. Spasm of both sterno-mastoids and supra-clavicular hollowing. 8. The lengthening of the line from the tip of the shoulder to the sterno-mastoid muscle on the right side. 9. The falling in of the right side of the chest and the lowering of the nipple.

Next, attention should be directed to the arms. It is well to draw one's hand down these. Frequently the skin is dry and harsh, indicative of a lack of nourishment of the epidermal tissue. Sometimes a sensation that is suggestive of velvet is imparted to the hand, due to an excessive secretion of the sebaceous glands. This is analogous to the hyperidrosis characteristic of cases with progressive disease who are living in an unhealthy environment. The subcutaneous tissues are frequently atrophied, and the skin often hangs loosely on the arms. As one picks it up, the sensation of damp wash leather is imparted at times. The veins frequently stand out prominently, especially on the upper arm in cases where, through pressure of enlarged glands, the venous return is interfered with. The muscles of the arm are often smaller in bulk than they should be judging from the general condition of the patient. Very often the bulk of the arm is smaller on the affected side. That this atrophy is not one of disuse is indicated by the facts, first, that the right arm in right-sided disease may often be seen to be smaller than the left, although the patient is right-handed, and second, this atrophy is progressive while the patient continues at work.

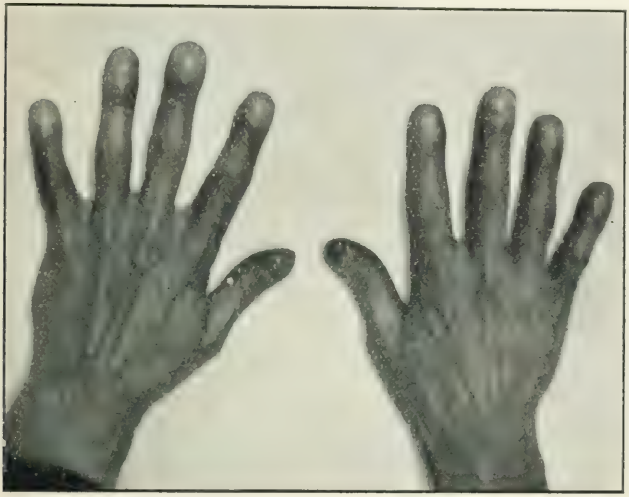

FIG. 3A. These hands belong to Fig. 3.

The axillæ should next be examined. Glands are occasionally felt. They are not characteristic of any lung lesion. More frequently when tuberculosis is present, the patient during examination perspires freely in that region. It is not a good sign. It generally is indicative of a fair degree of toxæmia, and improves *pari passu* with improvement of the lung condition of the patient.

Having examined the upper extremities, one next looks at the head and the neck. The hair, commonly, in keeping with other epidermal tissues, is affected; although apparently abundant, it is thin, dry, and brittle. Patients often complain that they cannot get their hair to lie, and that they have to use an excessive amount of pomade. One notices that as a case improves the hair regains its tone and its lustre.

The facies are important. One must not always associate phthisis with a thin wan countenance. The ancients, particularly Aretæus, recognised that this disease is frequently associated with a certain degree of adiposity, or lymphatic stoutness as they termed it. If you go round a sanatorium on a visitors' day, the contrast between the usual ruddy, plump condition of the patients, as compared with the thin, pale, and debilitated appearance of the visitors, is very striking. Close observation of the features even under such conditions reveals certain facts indicative of the condition of the lungs which are very suggestive, and guide one in determining where to examine most particularly.

The ears are interesting. You have noticed in advanced cases, with both lungs extensively involved, that both ears appear large and stand out prominently. This is due to muscular atrophy and subcutaneous wasting. The same fact may be demonstrated in cases which are not so advanced. On the side, if the condition be practically unilateral, where the disease is more marked, the ear seems larger, stands out more prominently, and is occasionally more red than the other. The eyebrows in tuberculous patients are usually bushy in character, and either unduly arched or very straight, meeting more or less in the middle line. The eyes are striking. Characteristically they are brilliant, yet not vivacious. Their expression is usually rather sad and dismal. They appear larger than normal. The palpebral aperture is wider and they are deeply set. One eye may appear more prominent, and the palpebral aperture may appear narrower on that side than the other. This is due to reflex irritation of the sympathetics, and is generally indicative of apical pleurisy or tuberculosis of the apex of that side. The pupils are at times unequal in size. One is frequently more dilated on the side where the disease is specially marked. We have noticed dilatation and occasionally a contraction of one pupil to occur, previous to the onset of acute symptoms or the lighting up of active mischief on that particular side.

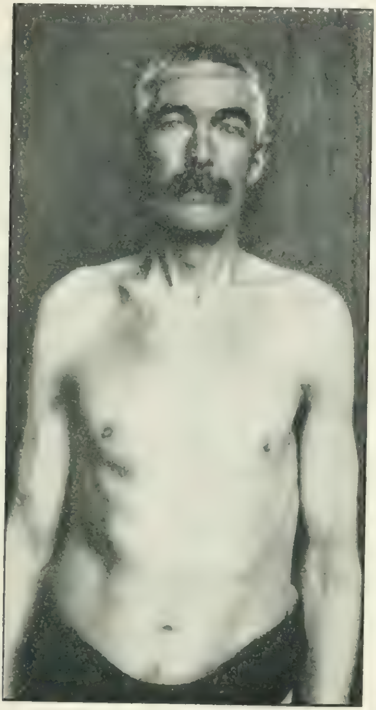

FIG. 4.

R. R. This patient had chronic phthisis. On the right side there was extensive consolidation; on the left, scattered infiltration. *Note.*—1. Hair dry and brittle. 2. Prominence of ears, especially the right. 3. Eyebrows bushy and arched. 4. Spasm of sterno-mastoids. 5. Angular condition of neck; the right angle is lower than the left. 6. The accentuated Morenheim's fossæ on the right. 7. Flattening of the right side.

The colour of the cheeks of patients is deserving of attention. Some are excessively pale. Cachexia with an unctuous condition of the skin is not a good omen. Tuberculous patients generally flush up readily, and if you watch closely, one side may be seen to be more markedly affected than the other. This also is related to the location of active mischief in the lungs. Such flushing need not be confused with the hectic flush, which, as has been aptly remarked, tells the tale that "Consumption already has hoisted its flag of 'no surrender.'" The hectic flush is a red spot over each malar bone, which shows up in strong relief against an excessively white skin. It is always indicative of acute disease, and gives evidence of progressive softening. A cyanotic condition of the cheeks and an indefinite blurring of the outlines of the face is indicative of cardiac failure, and an evidence of respiratory embarrassment. It is associated with dyspnœa on exertion.

The chin and the jaw in tuberculous subjects are usually slight and slender, and if you look closely an atrophy of the muscles as well as of the subcutaneous tissues may be seen in chronic unilateral lesions.

The mouth should always be examined. There is nothing characteristic about the teeth, except that they are to an abnormal degree decayed, a thing which should at once receive thorough attention at the hands of a competent dentist. As you put your hand out to touch the chin, to raise the head and look into the mouth, in cases which are not doing well a remarkable coldness may be noted, reminiscent of the anatomy room. The palate and fauces are generally extremely pale in cases of tuberculosis. If you used the laryngoscopic mirror, you would see that this pallor reached down into the trachea. Very marked pharyngeal and laryngeal pallor in tuberculous subjects is of a bad prognostic significance.

The patient should be asked to protrude the tongue. Its condition is generally suggestive of the condition of the rest of the alimentary canal. Commonly it is coated, and has raw edges in early and progressive cases. Tuberculosis, it may be remarked, very frequently manifests itself in the first instance by digestive disturbance, and not by cough. Especially in young persons, anorexia, flatulence, fulness after food, and abdominal pain which does not yield readily to the common remedies, should make one suspect tuberculosis. It at least calls for a thorough examination to exclude it. Remember the words of Garth in his *Dispensary*, published in 1699:—

"Whilst meagre phthisis gives a silent blow
Her stroakes are sure, but her advances slow,
No loud alarms nor fierce assaults are shown,
She starves the fortress first, then takes the town."

The protruded tongue, however, tells perhaps more than the condition of the tongue. Look at the direction in which it points, and you will notice this remarkable fact, not always, but generally true, it points away from chronic disease and points to an active lesion. It points away, because the musculature by continual reflex stimulation on that side has become over-taxed and has atrophied, and therefore ceases to keep it in the middle

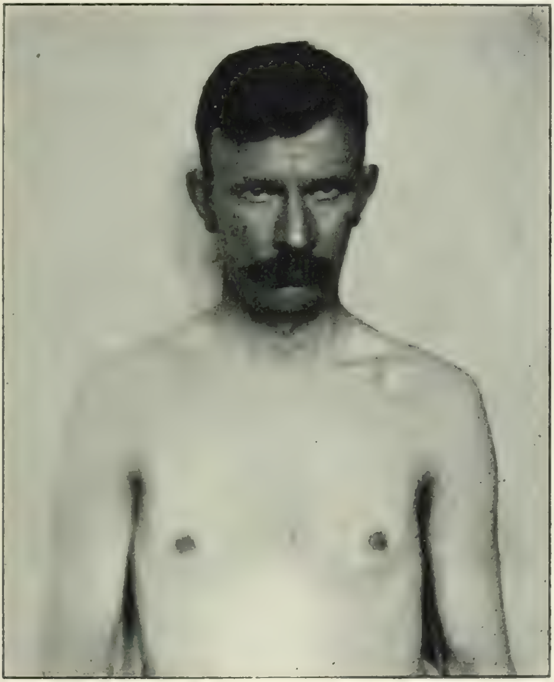

FIG. 5.

J. S. This patient suffers from tuberculosis of both lungs. The left side is involved from apex to base. There is disease at the apex of the right. *Note.*—1. The character of the hair. 2. The prominence of the ears. 3. The flattening of the left side of the face. 4. Angularity of the neck and the deepening of Morenheim's fossa on the left.

line. It points to an active lesion because of the stimulus from the lungs through the common nerve supply.

Thus you see the face may literally be full of information regarding the condition of the lungs. If we now look at the neck, we find that it supplements what has been thus far ascertained.

In examining the neck the head should be exactly in the middle line, and well thrown back. Call to mind the beautiful rotundity of the neck of health, and the graceful concavity on either side reaching from the mastoid to the acromion process. In tuberculosis the neck seems longer than normal and loses these curvatures, becoming abnormally angular. The wasting of the subcutaneous tissues and sometimes muscular spasm causes the various structures to stand well out—the larynx, the sterno-mastoids, the thyroid, &c. The muscles of the neck are particularly charged with significance in tuberculosis. If you look along the line of the sterno-mastoids and the trapezius, you will notice this fact in tuberculosis—the junction of these two takes place at a lower level than in health, and it does not take place gradually but sharply, giving a definite angle. The observation of this enables one to state that one or other side is involved, that the disease is more advanced and of longer standing on one side than on the other. When the disease is well advanced and fibrosis has taken place, and the chest wall on that side has fallen in to some degree, one may observe that there is a longer distance from the junction of the trapezius and the sterno-mastoid to the tip of the shoulder than is the case normally. These signs in the neck are partly produced by the toxæmia of the disease, and partly by a reflex stimulation from the ulcerative condition in the lung tissues. The nerve supply of the lungs, you may remember, comes largely from the third, fourth, and fifth cervical segments. The lungs in development are given off there, and as they descend into the thorax they carry with them their nerve supply from these segments. Disease in lung tissue causes stimulation of all the organs innervated by these segments. The fact explains why one gets unilateral spasm of the muscles in active disease, and unilateral atrophy and elongation of the muscles of the neck in old-standing, chronic, and fibrotic conditions. Spasm plus atrophy indicates generally an exacerbation of an old quiescent focus. Before leaving the neck one should palpate the anterior and the posterior triangle for glands. Obviously enlarged glands are not commonly got in association with pulmonary mischief, although their presence is by no means contra-indicative of the presence of phthisis. Small pinhead-like glands are very common. They are found in at least 60 per cent of cases of phthisis, and are of no little significance. There is little doubt that the chief channel of infection in tuberculosis of the lungs is, not through the alimentary canal, as is advocated by Whitla and others, but through the respiratory tract. The tonsils and the adenoid tissue of the naso-pharynx have been proved by Philip Mitchell and others to be common channels of ingress for the bacilli. The glands at the angle of the jaw are the first line of defence, and frequently, as a result of their fight, one gets marked enlargement and caseation of these, especially in children. The

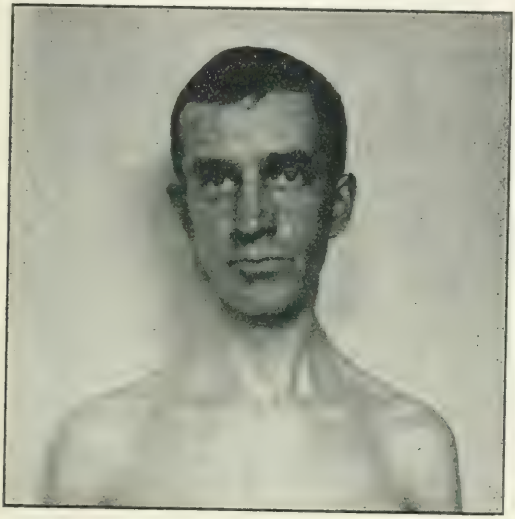

FIG. 6.

R. W. This patient suffers from advanced chronic phthisis. The whole of the left side is involved, and the upper half of the right. The disease is especially active on the right side at present. *Note.*—1. The thin, dry, brittle hair. 2. The prominence of the ears. 3. Bushy eyebrows. 4. The prominent, large, lustrous eyes. 5. The flattening of the left side of the face. 6. The lengthening and angularity of the neck. 7. The spasm of the sterno-mastoid on the left side. 8. The marked Morenheim's fossa on the left side.

danger is when the organisms get past those glands easily, causing simply slight swelling, and proceeding from trench to trench, as it were, with but little trouble, they eventually are swept by the lymph stream into the right side of the heart, and from there they are carried by the blood stream into the lungs. The first capillaries reached by them are those of the peribronchial tissue and the alveoli. By these they frequently are filtered out of the blood to set up disease in those regions. Pinhead glands are thus important. Their presence should not be missed. A mass of supra-clavicular glands is always indicative of tuberculosis of the apical pleura, and probably also of the lung. Never omit to palpate carefully both supra-clavicular areas.

Having learned practically all that is important which the hands, the arms, the head, the face, and the neck can teach us, we now look at the chest. It is only necessary usually to look closely and carefully at this to form a fairly accurate opinion of any pathological condition of the lungs and of the pleura, especially in the light of the knowledge already acquired. What type of chest do we most frequently meet with in phthisis? No type of chest is common or peculiar to this disease, and the mere shape is of little use in diagnosis. The normal robust form of chest is very common. One observer found 83 per cent such in 193 early cases of the disease. The flat chest is perhaps most common. It must always be looked on as an evidence of physical deterioration. Some look upon this type of chest as a predisposing factor in the disease. The pyriform exostosis of the sternal angle commonly known as the angle of Louis in such is usually more or less prominent and ankylosed, and there is frequently an associated calcification of the first and second costal cartilages. Very often chests of phthisical patients appear flat, but on measuring them they are found to be more round than in health—the antero-posterior diameter is nearly that of the transverse, suggestive of a persistence of the infantile chest, the apparent flatness being caused chiefly by the atrophy of the soft tissues. If there be a flattening in front one should look for a hump behind. The emphysematous barrel-shaped chest, showing a well-marked angle of Louis, is very common in tuberculosis, which is associated with chronic bronchitis or asthma. These occasionally render the diagnosis of tuberculosis difficult.

The **paralytic** thorax as described by Hippocrates is, of course, almost pathognomonic of the disease, although it is found apart from it. Long, narrow, flattened antero-posteriorly with prominent clavicles, oblique ribs, small subcostal angle and winged scapulæ, it is easily recognised. Mark you, it is not a common type of chest in the disease. You must get away from the fact that it is the characteristic type of chest in tuberculosis. A century and a quarter ago Laennec, writing of it, said, " Individuals so constituted form a small proportion of all consumptives. The disease frequently attacks the most robust and shapely individuals." That is certainly quite true to-day. Children of tuberculous parents are not born with paralytic chests. The characteristic development only takes place if the disease develops as years go on. Step by step with

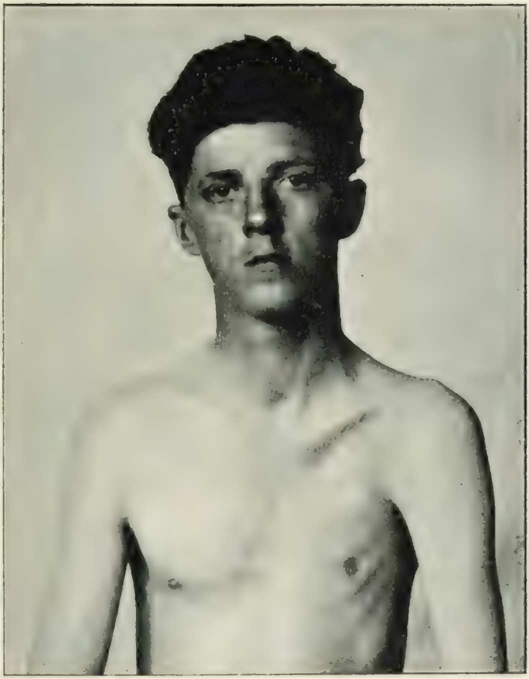

FIG. 7.

Congenital absence of the pectoralis major simulating flattening due to chronic ulcerative phthisis.

the progress of tuberculosis in the lungs not only do the features change, the form of the chest alters—the various structures, the symmetry, the mobility, all become different.

In inspecting the chest, attention should be directed definitely to each component part, and the one side should be compared with the other. The skin and the subcutaneous tissues, as elsewhere, are generally atrophied to some degree. If you pinch up the skin between the thumb and the forefinger over that area where the disease is more advanced, you find it generally looser and more atrophied.

Veins frequently stand out prominently, especially over the first and second interspaces, and in the neighbourhood of the first and second dorsal spines. These are indicative of pressure on the azygos vein by enlarged mediastinal glands, and interference with the return flow of the intercostal and internal mammary veins. Small dilated venules round the insertion of the diaphragm are frequently the result of excessive coughing.

The mammæ should be looked at, noting their level, their position relative to the middle line, their size and the colour of the nipples. They are lower and nearer the middle line in chronic disease. In early phthisis the mammary gland is generally a little larger on the affected side; in chronic disease it is usually smaller. The nipple on the diseased side is at times darker in colour than the other.

The muscles are important. Reflex spasm and, later, trophic degenerative changes may be noted in them. The two to which special attention should be paid are the pectoralis major and the serratus magnus. The pectoralis major is chiefly affected in disease of the upper lobe. When atrophied it causes Morenheim's fossa—the space between the pectorals and the deltoid—to become very marked. The serratus magnus is affected in disease of the base. Atrophy of the serratus magnus causes the scapula, to which it is attached, to become more or less winged. One should always bear in mind that definite areas of the neck and thoracic walls reflect the condition of definite areas of the lungs and the pleura.

The effect of habit and of work should, of course, always be borne in mind. Right-handed people generally have better developed muscles on the right side. This may simulate a condition of spasm. The atrophy of disuse must also be remembered. Patients who are off work for a prolonged period get flabby. This may simulate a condition of atrophy. To decide, one should study the condition of the skin and the subcutaneous tissues. These are not affected either by hard work or idleness. One should also look well at the neck muscles. The trapezius and the sterno-mastoids are not hypertrophied or atrophied by work or by idleness.

The cardiac impulse is of importance. It should be noted that it is displaced outward or inward by intra-pulmonary affections. In fibrosis and collapse, traction is brought to bear on the heart, and it is pulled over towards the affected side. There are two cases in the Sanatorium at the present time where we have a condition of pathological dextrocardia. The heart is altogether on the right side, in each case from this cause. Retraction of the left lung because of fibrosis causes exposure of the left auricle, and gives diffuse pulsation in the second and third interspaces. In cases of pneumothorax, of pleural effusions, and to a slight degree of emphysema, the heart is pushed over to the opposite side, and the cardiac impulse correspondingly displaced.

The bony structures are important, and should be studied as far as they can be seen. The clavicle is usually prominent, due to the wasting of the soft tissues. The sternal end is often slightly dislocated on the good side, when the other lung has retracted through disease. The acromial end is often at a lower level on the affected side, even in early cases of the disease.

The sternum appears flat except, however, for a prominent angle of Louis. It is not characteristic. The subcostal angle should be looked at. In health it is about 45 degrees on either side. In tuberculosis it is generally smaller on the affected side, especially when the disease is chronic in character, and well marked.

The scapula gives very useful information. It is at a lower level, and generally nearer the middle line in cases of unilateral chronic disease, and when the base is involved, as I have already pointed out, it may have a winged appearance.

It is not very easy to determine the degree of obliquity of the ribs. They cannot be felt or seen sufficiently well. This obliquity is increased or decreased according to the intra-thoracic condition present. In effusion and pneumothorax the ribs are more transverse. In infiltrations and in fibrosis the ribs become more oblique and assume a peculiar *roof-tile* appearance, which is well made out by *x*-ray photography. Attention to four things indicates the position of the ribs—(1) The level of the shoulders; (2) the position of the nipple; (3) the degree of the subcostal angle; (4) the position of the scapulæ. When the ribs are more oblique on one side than the other, the shoulder assumes a lower level: the nipple is lower also and nearer the middle line; the subcostal angle is smaller, and the scapula is lower down and nearer to the vertebral line. In inspecting a chest, we should always look at these four things, and compare the one side with the other.

The next step in examining is to note the effect of respiration. While doing this the patient should be shown how to breathe—at first quietly and later deeply—always without effort. Flattening may not be made out definitely till the patient takes a deep breath, and this is closely watched. Inspection should be made from the front, from the sides, and from the back. The oblique view is especially instructive. Two respirations should be watched in each position. During the first the degree of elevation should receive attention, and during the second the degree of expansion. The one side should be carefully compared with the other.

Early tuberculosis can often be recognised by the lagging of the side affected. To appreciate this lagging the patient should be looked at from a distance, and the acromial processes should particularly be watched. It is well to confirm the degree of elevation or of expansion by palpation. Very often the application of the hand not only corroborates what the eye has seen, it amplifies it, and indicates that the degree of limitation is greater than was suspected. In palpation the whole hand should be placed on each area in rotation, and the eyes should be turned away in order that one might not be biased as to the amount of movement.

It is also useful to palpate with the tips of the fingers each area of the chest, comparing the one side with the other. By the mere application of the fingers to the chest wall with firm pressure it is possible to tell the presence of infiltration, of consolidation, of fluid or of air in the thoracic cavity. It has been suggested that this is due to the reflex spasm of the muscles. That is not so, for it is possible to do it on the cadaver. Touch palpation is well worth practising. It guides one in percussion, and assists directly in visualising the intra-thoracic condition.

Finally, Litten's phenomenon may be sought for. The patient lies stretched out on a couch with his feet towards a window. The examiner stands between him and the source of light, and the axillary region is watched while the patient takes a deep breath slowly. In health a shadow passes from the sixth to the ninth ribs, a distance of about three inches. This is caused by the diaphragm pulling itself off the chest wall, and the atmospheric pressure causing a depression of the intercostal spaces. In tuberculous infiltrations of the base—pneumonia, pleurisy, especially with effusion, subphrenic abscess, peritonitis and ascites—this shadow is absent, of lessened amplitude, or less mobile than normal. It is difficult to elicit in a poor light or in stout people.

Our time is now exhausted. Much that might have been said relative to inspection has been omitted. Its value, as you can see, is undoubted. It more accurately than almost any other method enables one to visualise the pathological condition of the lungs and the pleura, and that, of course, is the purpose of all physical examination.

Although I have thus emphasised the importance of inspection, I do not, of course, by any means imply that it should be relied upon in the diagnosis of tuberculosis. Inspection will frequently suggest the presence of the disease even when not previously suspected. Enquiry into the personal and family histories of the case; examination by percussion and auscultation and by *x*-rays; investigation of the cytological as well as the bacteriological character of the spit; determination of the complement-fixing power of the serum in the presence of a tuberculous antigen, may all be required to confirm this diagnosis.

Certainly in view of the terrible death-rate from this disease, and the seriousness of the condition when it is progressive and advanced, it is of the utmost importance that every diagnostic technique should be made use of when necessary to enable us to reach a decision at the incipient stage when the prognosis is eminently satisfactory.

MEDICINE IN SCOTLAND IN THE EARLY PART OF THE EIGHTEENTH CENTURY.*

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To attempt to describe the state of medicine in Scotland two hundred years ago without at least a brief notice of the state of the country would be unjust to our predecessors; while at the same time certain circumstances associated with that period determined in some measure the direction and rate of development of the practice of medicine and surgery.

Probably the most striking feature at the beginning of the eighteenth century was the poverty of the people. With a population of 1,100,000 in 1701, it is estimated that there were about 300,000 paupers, while all the cash in the country probably did not exceed £600,000. "Stagnant trade, rude manufactures, profitless industries, and agriculture barely worthy the name, produced a people never well off and frequently starving." For seven years from 1696 the crops were a failure and famine resulted, so that sheep and cattle died in thousands, and a boll of oats which had previously cost five shillings rose to fifty-four shillings. During these "hungry years" death from starvation was common, and it is on record that in the North children were sold into slavery that money might be obtained to buy the bare necessaries of life. Long hours, poor food, and poor wages were the common lot of the peasantry, thirty-five shillings a year (paid partly in meal) being the common wage for a ploughman and his wife. A landowner was wealthy with a rent-roll of £500, and fairly well off with £100, although one-half or more might be paid in kind, as sheep, eggs, meal, salmon, or "dargues" (so many days' work).

Life in the towns was somewhat easier, though paupers were only too common. The presence of the Scottish Parliament gave to Edinburgh society an unique place in Scottish life. Many titled people had their town houses in the many-storied tenements of old Edinburgh, but some of these cannot have been suited to those of a fastidious taste, as Lord Kilkerran, who offered to let his flat at £20 sterling, added as a special recommendation that it was "free from bugs." The sanitary arrangements were simple if a little crude. Tenants were allowed to throw the day's refuse, solid and liquid, out of the windows to be collected by a few scavengers on the following morning. The cry of "gardy-loo" (gardez l'eau) warned those below, but the reply "haud yer hand" sometimes came too late to be effective, and doubtless Allan Ramsay, who was wig-dresser as well as poet, would receive a visit on the following morning. There was a regular trade in brown paper, as the citizens preferred the smell of burning brown paper to that from the streets, which was commonly known as the flowers of Edinburgh. The Union of Parliaments in 1707 removed much of the glamour from the Capital, and one might almost say that the glory had departed. The effect on Glasgow, with which we are more interested, was quite different. At the beginning of the century its population was about 12,500, and according to McUre, the earliest historian of the city, it contained ten streets and seventeen wynds. The High-Kirk or High Street, a little more than half-a-mile long, extended from above the Cathedral to the Cross. The College occupied a site on the east side where the College Station now stands, and behind it were the spacious gardens for the principal and regents. Joining the High Street from opposite sides, and not far from its upper end, were the Rottenrow Street and the Drygate Street. The former had contained the old Pedagogium, the reputed birthplace of the University, while the latter contained the lodging of the Duke of Montrose. Continuing the line of the High Street to the Clyde was the Saltmarket Street. Gallowgate Street was the eastern entrance to the Cross, while the Tron Street or Trongate continued the road westwards. The latter receives special mention because of the "stately lodgings, odouriferous orchyards and gardens on the north side." On the south side of this street, just west of the Tron Church, was the first hall of the Faculty, and it remained their home till 1791, when they removed to St. Enoch Square.

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* Read at a meeting of the Glasgow University Medico-Chirurgical Society, 12th February, 1920.

Bridgegate or Bridge Street, Stockwell Street, Princes Street, and King Street complete the list of streets at the end of the first quarter of the century. A meagre trade in dried salmon and herrings, coarse serges, woollens and linens, tarred rope and candles, sheepskins and stockings was carried on with the help of a merchant fleet of fifteen vessels, the largest of which was 160 tons. Trade was not permitted with the American colonies till after 1707, but as soon as the trading restrictions with Virginia were withdrawn, ships were chartered from the east coast, filled with the simple products of the city, and returned with a plentiful supply of tobacco, of which Glasgow became a most important distributing centre, so that the traders soon acquired considerable wealth and became known as the Tobacco Lords.

Inland travel was not much indulged in. Roads were notoriously bad, and not altogether safe. Scotland's nearest neighbour was its traditional enemy, and the cost of travelling was prohibitive except to the few. The journey to London cost two men £30 sterling in 1725. The first horse post to Edinburgh was in 1717, and there was no stage coach between the two cities till 1749. Scotland was thus very isolated, and the Scots found it easier and more agreeable to make friends on the Continent, and this played a distinct part in moulding medical history.

General education was starved, and even after the middle of the century there were 175 parishes in Scotland without either school or schoolmaster, although Parliament had decreed that both should be provided in each parish at the expense of the heritors and the tenants, and had fixed salaries for the schoolmaster. For a minimum of 100 merks Scots (about £5 sterling) plus fees, or a maximum of double that amount, he was instructed to teach Latin, mathematics, grammar, arithmetic, writing and singing. Part of his meagre salary was usually paid in kind, and was not always forthcoming. Occasionally he was able to supplement it from the freewill offerings of the pupils at Candlemas, or by charging for admission to the annual cock-fight, which was usually held in the schoolroom, or by acting as beadle or precentor at the church. Fees were half-a-crown to three shillings a quarter, and in spite of great disadvantages many children got sufficient education to enable them at the age of twelve or thirteen to enter the Universities, where the lectures were delivered in Latin. Grammar schools in more populous centres often bridged the gap between the parish school and the University.

Glasgow University had been a going concern for two hundred and fifty years when the century opened, but it was faced with a dearth of teachers as a result of the Reformation, and the method of regents had to be reintroduced. The regent took a class through the whole course, which comprised Greek, ethics, pneumatics, logic, mathematics and physics. Latin was not then taught in the Universities. The system of regents came to an end in Glasgow in 1727, when a professor of Greek was appointed. The number of students getting a training in arts in preparation for divinity or law cannot have been great at this time, but the numbers rapidly increased till in the middle of the century there were about 350 attending the College. The students were mostly poor, and they were allowed to bring their meal or barley into the town without paying the usual tax. Board and lodging could be obtained, by those able to pay, for £10 sterling for the session. Professors' salaries varied from £20 to £50, plus fees. There was no professor in any medical subject at this time, although the University had the right to grant degrees, and apparently sometimes did so without any evidence of previous study. Glasgow and Edinburgh were not bad in this respect, but St. Andrews and Aberdeen were notorious, and to this was ascribed the fact that the College of Physicians in London treated indiscriminately all Scottish degrees with contempt (William Hunter). Dr. Robert Mayne had been transferred from an Arts Chair to that of Medicine in 1637, at a salary of 400 merks Scots (£22), and had to "teache ane publict lecture of medicine in the saide Colledge once or twyse ewerie week except in the ordiner tyme of vacance:" but five years later the Commission of the General Assembly of the Kirk visited Glasgow and decided "that a professor of medicine was not necessar in all tyme cumming, but Dr. Mayne may continue during his tyme." He died prematurely four years later, and the Chair was buried with him. Thus the eighteenth century opened without any medical school at Glasgow University or elsewhere in the city.

Such, very briefly, was the state of our country and its educational facilities two hundred years ago, and in this atmosphere had our medical forbears to acquire their knowledge and to practise their art or craft of medicine or surgery. Grey Graham says—"Amid the resources of civilisation, one of the least trustworthy, though the most self-confident, was that of medicine." In no country in Europe was there any lack of mediciners; charlatans and quacks everywhere abounded. The storehouse of ancient medicine was open to the educated classes, and in the middle ages the monks thus acquired a certain knowledge of the subject, and in many cases quite a considerable practice. In fact, the cure of the body was usurping the place of the cure of the soul to such an extent that, in 1215, Pope Innocent the Third found it necessary to limit their medical duties by forbidding any operation that involved the shedding of blood: and in any case surgery was considered too much like manual labour, and as such placed the practitioner rather in the ranks of the handycraftsman than of the gentleman. Debarred from blood-letting, the monks found a way of retaining the emoluments by sending one of the servants of the monastery, and the choice naturally fell on the barber. Thus originated the class of barber-surgeons who acted as general practitioners, and they were not finally abolished in this country till early in the eighteenth century. Their advent definitely divorced surgery from medicine. The barber-surgeon acquired his knowledge by apprenticeship to one of the craft, but unqualified practice flourished without let or hindrance. Scotland was no exception to the general rule, but in Glasgow at the end of the sixteenth century the Kirk Session thought "it was time that the University, ministers, and Presbytery take cognisance who are within the town that pretent to have skill in medicine and have not the same: that those who have skill be retained and others rejected." An examining board was appointed, consisting of three bailies, three clergymen, the principal and one regent from the University, and the master of the Grammar School (the last three were clergymen), and they had power "to co-opt otherys cunning men of that arte." This was the first examining board in Glasgow, though it probably never examined. About the same time a most important event in the local history of our profession had occurred. Dr. Peter Lowe had arrived in the town from the Continent in 1597 or 1598. He had been surgeon on the Continent for thirty years, serving in the army in Flanders and France, and latterly at the Court of the French King. He was engaged by the town as a salaried surgeon, and being concerned about the state of medicine, he memorialised King James the Sixth, and in 1599 obtained along with a Dr. Hamilton the privilege "to examine all men upon the said arte of chirurgerie and to decide in the West of Scotland who are worthy or unworthy to profess the same," and "to inhibit in medicine all but persons possessed of ane testimonial from ane famous University quhair medicine be taught." With this dual control was inaugurated the Faculty of Physicians and Surgeons. Barber-surgeons enjoyed certain privileges; but the association became irksome, and the connection was officially abolished in 1720, though probably they had ceased to act as general practitioners before that date. All that remained to them as a souvenir of their higher calling, in addition to some financial compensation, was the striped pole and brass platter, the symbols of phlebotomy.

In London a class of apothecaries had arisen who confined their attentions to the composition and dispensing of drugs. In Scotland it would appear that the functions of apothecary and surgeon were frequently combined in the same individual, and the chirurgeon-apothecary took the place of the barber-surgeon as the general practitioner at the opening of the eighteenth century. Of these Glasgow boasted about twelve, a little more in proportion to the population than obtains at the present time. Together with one or two physicians they constituted the profession in the city, and they were carefully looked after by their guild or incorporation, as the Faculty was at that time.

Medical education next demands our attention. One fact will at once appeal to the modern medical student. There were no class tickets to be sought after, for the simple reason that there were no classes of instruction in any medical subject in the City of Glasgow at the beginning of the century. The prospective practitioner apprenticed himself to a surgeon in the town or surrounding country, and learned how "to bleed and give a clyster (an enema), spread a plaster and prepare a potion." The apprenticeship lasted from three to seven years, at different times and in different places. It would appear to have been five years in Glasgow at this time. The terms were rather strict. The apprentice bound himself "to serve his master by day and by night, holy-day and week-day; to reveal no secret of master or patient; to commit no filthy crimes or sins; to go to no professor of medicine, chyma, anatomy, surgery, or materia medica during the first two years," the last clause being added at a later date. For the £50 sterling which the apprentice had to pay, the chirurgeon "obliges himself to instruct him in the saide artes of surgery and pharmacy, and shall conceal nothing of the same, and shall entertain him in bed and board." On producing evidence of the completion of his apprenticeship, he was admitted to examination by the Faculty if he wished to practise in the West of Scotland. In the first or private part he was examined in the theory and practice of the art. If he passed he appeared publicly before the Faculty, and had to dissect a prescribed part of the body, to discourse on a medical or surgical theme, and to make up a complex prescription. The examination passed and certain fees paid, he was free to practise on the lieges, though he had received no public instruction in anatomy or physic, all his information having been acquired from a chirurgeon-apothecary of perhaps very little worth.

The physicians were in a class apart. They were not examined in Glasgow, but they had to produce a testimonial from a famous University where medicine was taught. As there was no such University in Scotland, students had to go to the Continent or to London, though the latter was not popular. Leyden, because of the personality of the great teacher, Boerhaave, exerted a great influence on Scottish medicine, while Utrecht, Rheims and Paris also attracted students. Even when admitted to the Faculty the physician was not allowed to practise surgery, and if found encroaching on this territory he had either to pass the examination or pay a fine of £40 Scots.

Midwifery was then in the hands of a few midwives, and the town was more concerned with their morals than with their medical ability, for their oversight was in the hands of the Kirk Session. One reason for this was that they might report to the Session the name of the father of any illegitimate child, so that the father might be duly punished. Two being discovered at one time, they were fastened to a public building, with a placard bearing the words, "Thir are adulterers."

Medical teaching in Edinburgh was a little more advanced.

The Town Council there granted the Incorporation of Surgeons the corpses of foundlings, suicides, and murderers. The bodies were divided into ten parts and distributed to as many surgeons, who might dissect for the benefit of themselves or of their apprentices. In 1704 a public dissector was appointed at a salary of £15 "to encourage the young men to stay at home and not go to foreign Universities, which is attended by expenses and perils to youth." But even greater developments were at hand, for John Monro, a Scottish army surgeon, conceived the idea of starting a medical school in the Capital, and with this intention sent his son, Alexander Monro, primus, to be educated at London, Leyden, and Paris. When the latter returned in 1720 he was appointed Professor of Anatomy at the age of 22. His fame rapidly spread, and during the tenure of the Chair by him, and later by his son, Alexander Monro, secundus, it is said that 12,800 students attended the classes in seventy years. To the Monro family is undoubtedly due the fame that Edinburgh University had in the eighteenth century, and the tradition helped it not a little in the next.

Glasgow was at first a little less fortunate. The Chair of Practice of Medicine, which had been allowed to lapse in 1646, was revived by the University, and endowed by Queen Anne in 1714. To it was appointed John Johnstoun, who had taken the degree of M.D. at Utrecht in 1709, and he held the post till 1750. The University and Crown jointly instituted the Chair of Anatomy in 1720, and with it botany was associated. Dr. Thomas Brisbane held the appointment till 1742. While this looks like progress, we are disappointed when we read that it is not known that either of them delivered any lectures. They apparently, however, examined for the degree of M.D., with the assistance of a physician or two from the town. After Brisbane's death, Dr. Hamilton, a Glasgow graduate, was appointed to the vacant chair, and delivered lectures on anatomy. The method of obtaining dissecting material is not recorded, but the Faculty may have known when they found it necessary "to record their abhorhence and detestation of the crime of violating the dead, and to lay down certain penalties." Duncan, in the *Memorials of the Faculty*, suggests that this may have been an admonition to members and their apprentices to eschew the crime of being found out.

The foundation of a medical school had thus been laid, though the Chair of Medicine was a sinecure. To Dr. William Cullen must be given the credit of making that school a live institution. Born in Hamilton in 1710, he was educated at the grammar school there, and later attended classes at the Glasgow University. About the age of 15 he was apprenticed to a Glasgow surgeon, fortunately a man of studious bent, and one possessed of a good library. After finishing his term he proceeded to London, and took a post as surgeon on a ship trading to the West Indies. On his return he studied materia medica with an apothecary in London, and then settled for some time in Shotts in general practice. A further period of study in Edinburgh, where the school started by Monro fifteen years before had already got a reputation, was followed by a term of successful practice in Hamilton, where he attracted the best of the patients, including the Duke and Duchess of Hamilton. He had a number of apprentices, among whom was William Hunter, who later became famous as an anatomist in London, and whose priceless museum, partly owing to the parsimony of the Government of the day, now adorns our own University. Hunter and Cullen afterwards entered into a partnership agreement by which Cullen could devote his time to medicine and Hunter to surgery, and each was to be allowed sufficient time off for study. Cullen went to Edinburgh, and in 1740 took the degree of M.D. at Glasgow. Hunter went to London, and so attracted an anatomist there, that he was offered the position of assistant, which, with his partner's consent, he accepted. The two friends often corresponded, and the idea of setting up a medical school in Glasgow that would equal the one in Edinburgh was clearly in their minds. Shortly afterwards, at the invitation of some influential citizens, Cullen found his way to Glasgow, where he settled in 1744. He immediately began giving a course of lectures in medicine as an extra-mural teacher, but the following winter, with the permission of Professor Johnstoun, he lectured inside the University. He further obtained permission to deliver a course on botany, as Professor Hamilton did not take up this part of his professional duties. On his own account he added chemistry and materia medica, and was recognised as lecturer in the former subject by the University. The number at his medical classes probably did not exceed twenty; but his lectures on chemistry attracted a wider audience, as he treated the subject in its general scientific aspects as well as its medical application. One of his students, who afterwards became famous in this subject and added lustre to the University, was Joseph Black, who is chiefly remembered for his work on latent heat and carbon dioxide. In 1751 Cullen was appointed to the vacant Chair of Practice of Physic, and the notes of his lectures formed the basis of a book he published at a later date, viz., *First Lines on the Theory and Practice of Physic.* His lectures were marked by one or two innovations. Hitherto all University lectures had been delivered in Latin, but he decided to use his mother tongue, and he used only notes, whereas the previous custom had been to read from written lectures. Again, the text-book of Boerhaave, of Leyden, entitled *Institutions and Aphorisms,* was the basis of most medical lectures of the period, but Cullen thought it more profitable to expound his own ideas than to comment on those of others. His tenure of the Chair was short, for in 1755 he was made Professor of Chemistry at Edinburgh, and Hamilton succeeded him as Professor of Medicine. Black succeeded Hamilton in Anatomy, which was not at all to his liking, but he got the Lectureship in Chemistry, where he found his true work. In ten years Cullen became Professor of Physic at Edinburgh, and Black got the Chair in Chemistry there. The Cullen Medal in clinical medicine and the Black Medal in chemistry help to keep green the memory of these two eighteenth century pioneers who did so much to give to Glasgow a start in its career as a great medical school.

Clinical medicine as a subject of study has not so far been mentioned. Further than that obtained from his master, the apprentice had no opportunity of receiving regular bedside instruction in the earlier half of the century, either in the East or the West. John Rutherford, Professor of Practice of Physic at Edinburgh, gets the credit of being the first to adopt this method of teaching in Scotland. He had a class in the Royal Infirmary in 1748. Cullen, while Professor of Chemistry, began giving regular clinical lectures in the Edinburgh Royal Infirmary in 1757, and continued doing so for eighteen years. Rutherford had been a pupil of Boerhaave, the great exponent of this method of teaching, and Monro, primus, had also been taught at Leyden, and he was readily induced by Cullen to give clinical lectures in the surgical wards. For a time Edinburgh and Vienna, both influenced by Boerhaave, contained the only two schools where clinical instruction was the rule. Glasgow had no general hospital till the Royal Infirmary was opened in 1794. The first of any kind seems to have been St. Ninian's Hospital, erected about 1350, for the confinement of those afflicted with leprosy. It stood on the south side of the river, about the foot of what is now called Hospital Street in the Gorbals. The only provision for the ordinary sick poor for many years was that afforded by the Faculty at their monthly meeting by giving gratuitous advice and medicine, this being according to the terms of their charter. It is of interest to note that the minutes of the Faculty to this day close with the words, "the poor were visited gratis, and the Faculty adjourned." This monthly dispensary was found to be unsatisfactory, as one can readily imagine, and the Town Council appointed a physician, surgeon, apothecary, and stone-cutter to attend to the poor at a salary of £66, 13s. 4d. Scots each. The city funds could not bear this expense for long, and the method was dropped in 1684. About fifty years later a Town's Hospital or Poor House was erected on the Old Green near the Clyde, just to the west of Stockwell Street, the funds having been obtained by private subscription. McUre speaks of it as the town's great and magificent hospital near the Broomielaw harbour. Twenty beds were included in it for the sick poor, eight being reserved for cases sent in from the city by practitioners. Occasional clinical lectures were given there in 1789, but regular instruction was given in 1797 in the Royal Infirmary.

Midwifery was, as we have noted, in the hands of midwives, who were looked after by the Kirk Session; but the Faculty, in 1740, "having considered the many dismal effects of their ignorance," instituted an examination, and prevented unlicensed women from practising. University lectures in midwifery were first given along with anatomy; but in a newspaper, the *Glasgow Journal*, dated 15th October, 1759, John Muir, surgeon, advertises "a course of lectures on midwifery. No woman admitted without a certificate of sobriety and prudence. A separate course for students. Mr. Muir will continue to deliver gratis all women who apply." William Smellie, who practised in Lanark from 1720 to 1739, was the great exponent of man-midwifery, but much of his work was done in London. He was accused there of trying to teach the whole science in four lectures, and of hanging a paper lantern above his door with the invitation, "Midwifery taught here for five shillings." Very soon surgeons and even physicians were willing to undertake such cases, and we read of the Duchess of Montrose being attended during her confinement by a physician in her house in the Drygate towards the end of the century.

In trying to trace the progress made in medical education we have perhaps inadvertently lifted the veil, which obscured the future, which was so full of promise, from the ordinary man of the time. What about the general practitioner, the chirurgeon-apothecary, who had not had these advantages in Scotland, and who was prevented by his poverty from acquiring his knowledge on the Continent? Cullen, in an address delivered in Edinburgh, says, "A physician can be judged by his prescriptions, and a college of physicians by its pharmacopœa. I must say that the pharmacopœas of several colleges in Europe have contained things shocking to the common sense. To the honour of the College of Physicians be it said that they were the first to execute a reformation. Their pharmacopœa has been in request over Europe for some time." Let us look at some examples of cures prescribed by the practitioners, and at the third edition of the reformed official publication of 1737.

When sickness necessitated a visit from the chirurgeon-apothecary he duly appeared with some medicaments, a lancet, and a sand-glass to count the patient's pulse. Blood-letting almost took the place of the purge of the last generation. It formed part of almost any line of treatment, and often was the only treatment. The practitioners usually had their gardens, where many of their herbs could be obtained, and also other ingredients of their cures, such as spiders, frogs, worms, and slaters or woodlice. Physic gardens were also connected with the University in 1704. The thought of some of the reputed cures might almost have been sufficient to keep people well. A few selected remedies may be noted:—For kink-hoast—five leeches behind the ear; for jaundice—burnt earthworms in decoction of wormwood; for consumption—snails boiled in cow's milk; for convulsions—application of sheep's lung or a young pigeon, whelp, or chicken slit in the middle. Dr. Clark, a famous Edinburgh physician, who charged one guinea for his advice, prescribed for pleurisy "a ball of horse's dung, well dried, beat it into a powder, drink it, and he will be cured." Dr. Pitcairn, a physician from the same town, who had been a professor on the Continent, recommended for scurvy "a mixture containing sarfa shavings, wort, crude antimony, sharp-leaved docks, dried rosemary, and the juice of four to five hundred slaters squeezed through linen. When bottled twenty days, drink it." Such cures could be multiplied, but we turn with relief to two methods of treatment which accord better with modern views. These are the taking of the waters at Moffat, and what is rather crudely spoken of as "the goat's milk." People seemed to get out of sorts even in these leisurely days, and for these a visit to the Highlands to drink the goat's milk might be prescribed. One writer remarks in June, 1726—"All the ministers about Glasgow are out of town at the goat's milk." The official pharmacopœa of 1737 contained such remedies as spider's web and viper's body, Spanish flies and pigeon's blood, bodies and eggs of ants, spawn of frogs, excrement of horse, pig, goat, and peacock, human blood, fat, urine and skull, mummy, snails, crab's claws, and the juice of woodlice. Vinum millipedanum, the best preparation of the latter, was prepared by taking "two ounces of slaters, bruise them a little, and pour over them a pint of Rhenish wine." Mummy, supposed to be obtained from Egypt, was usually made by Jews in Paris, and fetched a handsome price. Under the presidency of Cullen all these loathsome remedies, except the much esteemed slaters, disappeared from the edition of 1776.

One surgical item is worthy of mention, as it seems to lighten the gloom of the times. Robert Houston, a Glasgow surgeon, was called to Renfrew in August, 1701, to see a woman whose case had been deemed hopeless by the surgeons and physicians who had seen her. She had swelling and pain in the abdomen, could hardly breathe, and was much emaciated. He did not know what was wrong, but with the instinct of the modern surgeon he was prepared to go in and see. With a lancet he made an incision of five inches and found "a glutinous substance bung up the orifice." With some lint wrapped round a fir splinter he managed to remove about nine quarts of this glue-like material along with a number of cysts the size of oranges. He put in three stitches, covered the wound with pledgets of wool covered with balsam and napkins steeped in French brandy. Three weeks later he found her in a field superintending some work about her farm. She lived for thirteen years.

Some items from accounts give us an idea of the fees charged for prevalent disorders. To Miss H. C., for vapours and itch, £6, 6s. Scots (10s. 6d. stg.): to Sheriff of Moray, for itch, £6, 9s. Scots: to J. W., £6 Scots. for several times letting blood of his wife and going three times to his house (4 miles): to W. N. a guinea, being a reasonable charge for performing a cure to his nose when the same was cut off by J. B., as alleged. Even quacks were sometimes recognised, and one kirk record shows an expense to Mr. Green, the mountebag, of £9, 6s., for couching John Rodger's wife's eyes. Physicians received a guinea, to be paid at the time in acute cases or every two or three weeks in chronical cases. The Faculty advertised this in the press, and also added that if visits were wanted in the forenoon the call should be in before 10 o'clock. The fee for phlebotomy was 5s.

The profession seemed to be loath to lose its patients, and when a modified embalming was performed for the upper classes this was in the hands of the doctor or his apprentice. A cere cloth had to be provided, and this might cost over £65 Scots, while oil and incense were extra. Funeral expenses were heavy, and wines added not a little to the cost. The various steps seem to have been punctuated by drinks: thus "two bottles claret when the cere cloth was put on, one bottle when the grave clothes were put on, and at the coffening where the ladies was, one bottle claret, two of white wine, and one of canary." Before going to the grave the company regaled themselves with sack, claret, and ale, and one writer says that the mourners often sat drinking till they could not stand. Allan Ramsay quotes the dying request of a laird to his son, "For God's sake give them a hearty drink."

One has the feeling in reading about these old mediciners that the picture is often overdrawn, but most of the facts can be verified from official records which are still extant. One can only hope that there were many better than the worst. Then one must recollect that the times were desperate, and the individual's opportunities were few. Scotland was practically an isolated country in the beginning of the century. London had already had its Sydenham and Chiselden and Pott, and the Continent had some famous names to its credit; but even out of the swamp of its ignorance Scotland was able to produce Cullen, Black, and the Monro family, while it gave to London William and John Hunter and Smellie even in those early days.

And there is this great satisfaction in looking back that we get an idea of the great advance that was made, when we find that the 60 students in Edinburgh in 1750 became 660 in 1800, and Glasgow's 20 students under Cullen increased to 352 in anatomy alone in 1813, the time of last century's great war. And we can think with pride of a country, which, having no medical schools, in less than a century produced those which drew students from all parts of the world, and which have not yet been eclipsed in the quality of the medical graduates which they have produced.

CURRENT TOPICS.

THE GLASGOW MEDICAL SCHOOL.

We publish the following particulars of the medical curriculum in view of the near approach of the winter session, which opens on the 13th October:—

University of Glasgow.

The University grants four degrees in medicine. Of these, the M.B. and Ch.B. must be taken together.

The following outlines of the regulations for graduation are in accordance with the New Medical Ordinance, which came into operation on 1st October, 1911:—

Before commencing medical studies, the student must pass the preliminary examination. This comprises (1) English, (2) Latin, (3) Mathematics, (4) an Additional Language, namely, Greek, French, German, Italian, or such other language as the Senatus may approve. In the case of a candidate whose native language is not English, certain modifications may be made in the preliminary examination.

The certificate of having passed the above examination must, along with satisfactory evidence of the applicant having attained the age of sixteen years, be transmitted to James Robertson, Esq., 54 George Square, Edinburgh, so that the intending student may be registered in the books of the General Medical Council. Certain other examinations, or a degree in Arts or in Science from a recognised University, are accepted as exempting from the preliminary examination.

The degrees of M.B. and Ch.B. will not be conferred unless the candidate has been registered in the books of the General Medical Council for at least five years previously. The academical year commences on the first day of October. In each year there is one medical session of not less than thirty teaching weeks. The session is divided into three terms, two of which are deemed the equivalent of a winter session and one the equivalent of a summer session. Two of the five years of medical study must be spent at the University. There are four professional examinations. Of these, the first comprises Botany, Zoology, Chemistry, and Physics. Candidates are admitted to examination in any of these subjects, after attendance on the prescribed course or courses, at times to be determined by the Senatus. Those who have passed the first professional examination may be admitted to the second (Anatomy and Physiology) after the end of the sixth term (*i.e.*, second year). The third examination (Materia Medica and Therapeutics and Pathology) may be taken after the end of the ninth term (*i.e.*, third year). The final examination is open to those who have passed the third examination and completed the fifteenth term (*i.e.*, fifth year). The examination comprises Medical Jurisprudence and Public Health, Medicine, Surgery, and Midwifery, and the Diseases peculiar to Women and to Infants. Every candidate for the final examination must submit a declaration, in his own handwriting, that he has completed his twenty-first year, or that he will have completed it on or before the day of his graduation. The final examination is, like the other three examinations, held twice yearly—at the close of the winter session and of the summer vacation.

Class fees vary; for the majority of classes the fee is £4, 4s.

Clinical courses are taken in the Western and Royal Infirmaries. Attendance on the classes of the physicians and surgeons in both institutions is recognised for purposes of graduation. In addition to clinical courses, the Professors of Medicine, Surgery, and Midwifery at the Royal Infirmary conduct courses of systematic lectures.

Women students are admitted to certain classes in the University buildings. The remainder of the classes are held in Queen Margaret College. The clinical classes are taken in the Royal and Western Infirmaries.

The higher degree of M.D. may be taken by anyone who holds the Bachelor's degrees in medicine and surgery, on his complying with certain conditions. These are: That he must be of the age of twenty-four years or upwards; that he produces a certificate of having been engaged subsequent to having received the degrees of M.B. and Ch.B. for at least one year in attendance in the medical wards of an hospital or in scientific work bearing directly on his profession, such as is conducted in the Research Laboratories of the University, or in the naval, military, colonial, or public health medical services, or for at least two years in practice other than practice restricted to surgery. The candidate must pass an examination in clinical medicine, and must submit a thesis, for the approval of the Faculty of Medicine, on any branch of knowledge comprised in the second, third, or fourth professional examination for M.B. and Ch.B., excepting subjects which are exclusively surgical. Similarly, the degree of Ch.M. may be obtained by examination in clinical surgery and the presentation of a thesis on a subject not exclusively medical.

Full particulars of courses, fees, dates of examination, &c., will be found in the *University Calendar* (Messrs. MacLehose & Sons), or may be obtained from Albert Morrison, Esq., Registrar, the University.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

(1) *Triple Qualification* (L.R.C.P.E., L.R.C.S.E., & L.R.F.P.S.G.).—In conjunction with the Royal Colleges of Physicians and Surgeons of Edinburgh, the Royal Faculty of Physicians and Surgeons, Glasgow, grants a licence to practise. This Triple Qualification admits to the *Medical Register*, and those possessing it are eligible for the public services. The course of study and the examinations are similar to those for the University degrees, but the class fees are in many cases lower than those payable in the University. Qualifying courses are held in The Anderson College of Medicine and in St. Mungo's College, and particulars may be obtained from the respective Deans. Regulations for the triple qualification may be had from Walter Hurst, Esq., Secretary to the Royal Faculty of Physicians and Surgeons, 242 St. Vincent Street, Glasgow.

(2) *Fellowship.*—This fellowship is open to registered practitioners of not less than 24 years of age, and of not less than

two years' standing. The candidate must pass an examination in medicine or surgery, and in any one of the following subjects which he may select:—Anatomy, Physiology, Pathology, Midwifery, Diseases of Women, Medical Jurisprudence, Ophthalmic Surgery, Aural, Laryngeal and Nasal Surgery, Dental Surgery, State Medicine, Psychological Medicine, Dermatology. In the case of candidates engaged in connection with the war, an examination in one subject only will be accepted as sufficient, and this privilege will hold good in the case of candidates coming forward within five years of the termination of the war.

The fee payable in respect of the Fellowship is £30, with an additional fee of £20 to qualify to hold office. In the case of a Licentiate of the Faculty the fees are £25 and £15 respectively. Fellows residing within seven miles of the Faculty Hall must pay the additional qualifying fee, but those outside that radius may or may not so qualify themselves.

EXTRA-MURAL SCHOOLS.

The Anderson College of Medicine.—This school is situated in Dumbarton Road, adjoining the main entrance gate to the Western Infirmary. It provides education in all subjects of the curriculum both for medical and dental students. The classes qualify for the M.B. and the Triple Qualification. Clinical instruction is provided in the Western or Royal Infirmaries.

St. Mungo's College.—The school is in the grounds of the Royal Infirmary, Castle Street, and the students, as a rule, attend the clinics in the Infirmary. The classes are recognised by the University. They qualify also for the Triple Qualification.

CLINICS.

Royal Infirmary (St. Mungo's College adjoins), 835 beds, (including Ophthalmic Institution).—Visit hour, 9 A.M. daily; Outdoor Department, 2 P.M. Fees:—1. For infirmary attendance, dispensary, &c.—(*a*) for perpetual ticket, £7; (*b*) for season tickets—six months, £2, 2s.: three months, £1, 1s. Separate payments for season tickets, amounting in all to £7, 7s., entitle a student to obtain a perpetual ticket in exchange therefor. 2. For clinical instruction—two terms, or six months, £3, 10s.; one term, or three months, £1, 15s. Students who have paid to any other hospital in the United Kingdom or elsewhere the fees necessary to obtain a perpetual ticket for such hospital shall be admitted as students of the Royal Infirmary on payment of a hospital entrance fee of £1, 1s. for attendance for six months and 10s. 6d. for attendance for three months, and where a class for clinical instruction is taken, he shall pay in addition the fees for such instruction as above stated. Vaccination, £1, 1s.; pathology, £4, 4s., or for University graduation, £6, 6s; bacteriology, £2, 2s.: practical pharmacy, £1, 11s. 6d. Fees for the above, as well as for all medical classes connected with St. Mungo's College, are payable to the Superintendent of the Infirmary, Dr. J. Maxtone Thom.

Western Infirmary (adjoining the University), over 600 beds. —Visit hour, 9 A.M. daily; Outdoor Department, 2 P.M. Special wards are set apart for Diseases of Women and for Affections of the Skin. In the out-patient department there are special clinics for Diseases of Women and for Diseases of the Throat, Ear, Teeth, and Skin. The Clinical Courses are given by the physicians and surgeons, each of whom conducts a separate class, and students require to enter their names at the beginning of the session for the class which they propose to attend. Special instruction is given to junior students by tutors or assistants, and clinical clerks and dressers are selected from the members of the class. All the courses of clinical instruction are recognised by the University of Glasgow and the other boards in the kingdom. In the Pathological Department the course is both systematic and practical, also post-graduate courses, and extends through the winter and following summer: these are likewise recognised by the University for graduation. Fifteen resident assistants are appointed annually, without salary, from those who have completed their course. The fee for hospital attendance is £7, and the fees for clinical instruction are £3, 3s. for the Winter Session and £2, 2s. for the Summer Session. Students who hold a Life Ticket from another hospital shall be permitted to enter for a six months' course of the hospital only, on payment of a fee of £1, 1s., or a three months' course for 10s. 6d. A Clinical Laboratory has been opened, and students receive laboratory instruction from the lecturer on clinical methods. The fees should be paid to the Superintendent, Dr. D. J. Mackintosh, C.B., M.V.O.

A School of Massage, Medical Electricity, and Swedish Remedial Exercises has been established to qualify for the Certificate of the Incorporated Society of Trained Masseuses.

Victoria Infirmary (Langside), 260 beds.—It has been arranged that, in future, qualifying courses of clinical instruction in medicine, surgery, and special diseases will be conducted by the physicians and surgeons of this Infirmary during the teaching terms. Particulars regarding fees, enrolment, &c., may be obtained on application to the Superintendent, Dr. D. O. Macgregor.

Royal Hospital for Sick Children (Yorkhill), 206 cots.—Visiting physicians and surgeons attend 9.15 A.M. daily.

Dispensary or Out-patient Department. Over 12,000 cases treated annually. Physicians and surgeons attend 11.30 A.M.

Country Branch Hospital (Drumchapel, Dumbartonshire), 26 cots.

For the clinical instruction of students the year will be divided into three terms. A special course of lectures and clinical instruction on the medical and surgical diseases of children (meeting the requirements of the Medical Ordinance) will be given in each of said terms. The class will meet daily at 11 A.M., and will consist of 15 medical and 15 surgical meetings.

Students attending the hospital in their third year of clinical study will be given every opportunity of taking part in the regular clinical work in the wards under the supervision of the visiting physicians and surgeons.

Hospital fee (admitting to hospital and dispensary for purpose of clinical instruction, and attending said special course, &c.), for one term, £1, 1s.; or for whole year, £2, 2s.; fee for clinical instruction and said special course for one term, £1, 15s. Fees are payable to, and further information may be obtained from, the Medical Superintendent, The Hospital, Yorkhill.

Eye Infirmary (174 Berkeley Street and 80 Charlotte Street).—Hour of visit, 1 P.M. daily. Fee for six months £1, 1s.; for twelve months, £2, 2s.

Ophthalmic Institution (126 West Regent Street).—Hour of visit, 2 P.M. Fee for a qualifying course, £1, 1s.

Insanity.—During the summer session a course of lectures is given in the University, and clinical instruction in the Royal Asylum, Gartnavel. Fee for combined course, £2, 2s.

Dr. Oswald conducts, in addition to the above, a clinic on Incipient Mental Disorders in the Out-patient Department of the Western Infirmary.

At Gartloch Asylum, Gartcosh, senior medical students may obtain appointments as resident clinical clerks. The appointments are for six months, and those holding them can attend classes in Glasgow in the earlier part of the day. Applications should be sent considerably in advance to the Medical Superintendent, Dr. W. A. Parker.

Clinical lectures are given at Hawkhead Asylum by Dr. James H. Macdonald, "Mackintosh" Lecturer on Psychological Medicine in St. Mungo's College. Systematic lectures are given at the College as part of the same course.

Fevers.—Clinical instruction is given in Belvidere and in Ruchill Hospital. Fee, for a course extending over ten weeks (once a week), £1, 1s. Apply to Mr. James D. Borthwick, 285 George Street, Glasgow.

The Royal Maternity and Women's Hospital.—Clinical instruction in Midwifery and Gynæcology is provided, and there are exceptional facilities for practical work in the Outdoor Department of the Hospital.

Gynæcology.—Clinical instruction is given in the Gynæcological Departments of the Western and Royal Infirmaries.

The Royal Samaritan Hospital for Women.—This Hospital, founded in 1886, is one of the largest, if not the largest, purely gynæcological hospital in Great Britain, possessing, as it does, over 90 beds. It offers excellent facilities for clinical instruction in the diseases peculiar to women, treating in the wards and in the out-patient department some 4,000 cases per annum. The surgeons (four in number) visit the wards in the mornings.

For further information, application may be made at the Hospital, or to Thos. Macquaker, Esq., Honorary Secretary, 89 West Regent Street, Glasgow.

Diseases of the Skin, and of the Throat, Nose, and Ear are taught in the special departments of the Royal, Western, and Victoria Infirmaries. The *Hospital for Diseases of the Throat, Nose, and Ear* (Elmbank Crescent) affords further opportunities for the study of these diseases.

Post-Graduate Study.

For quite a number of years past, courses of teaching for graduates have been regularly provided by the staffs of the larger hospitals. A central organisation has now been formed —the Glasgow Post-Graduate Medical Association—for the purpose of arranging, co-ordinating, and administering post-graduate medical teaching in Glasgow and the West of Scotland. General and special courses will be arranged and duly advertised. A comprehensive permanent scheme has been adopted, and with its wealth of clinical material it is confidently anticipated that Glasgow will become one of the leading centres of post-graduate medical teaching.

Glasgow University.—At the July graduation ceremony the following degrees were conferred :—

DOCTOR OF MEDICINE (M.D.)

I. With Commendation.

James Gordon Wilson, M.B., Ch.B.

II. Ordinary Degrees.

Albert Barnes Hughes, M.B., C.M.
Donald MacKenzie MacRae, M.B., C.M.
John Young, M.B., Ch.B.

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY (M.B., Ch.B.)

I. With Honours.

John Wylie, M.A.
James Lorimer Halliday.

II. With Commendation.

William John Ferguson.
Robert Dick Gillespie.
John Lang Anderson, M.A.
Helen Frances Wingate.
Archibald Gordon Smith.
Elsie Florence Farquharson, M.A.
Margaret Longwill Johnston.
William John Payne.
Gilbert Paterson.

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY (M.B., Ch.B.) (*continued*).

III. Ordinary Degrees.

Marion Bell Armstrong.
James Baird.
Annie Barlow, B.Sc.
Lillias Elizabeth Barr Buchanan.
Alister Campbell.
James Gibson Campbell.
Edith Chalmers.
James Livingstone Cowan.
Edith Margaret Davidson.
Simonne Denil (Mrs. Thomson).
Christian Melville Fleming.
John Frew.
Robert MacInnes Gardner.
James Alexander Moore Hall.
Jack Hurwich.
Elizabeth Smith Inglis.
Isabel Edgar Russell Jeffrey.
Anna Taylor Kellock.
William Malcolm Knox.
John Lavelle.
Jane Carrick MacDonald.
Robert MacKintosh M'Kean.
Alexandrena Miller Maclennan.
Peter M'Luskie.
Joseph Patrick M'Millan.
Peter Macmurray.
Charles Melville.
Janet Dick Montgomery.
James Orr.
James Paterson.
Tejendra Nath Ray.
Wilfrid Henry Scott.
James Smart.
David Croydon Smith.
Mary Steven.
Margaret Mavor Stuart.
Helen Bruce Sutherland.
James Nisbet Tennent.
Jonathan Robson Turner.
Mary Carswell Walker.
Daniel May Watson.
Mary Lyle Wilson.
Agnes Hart More Young.

Triple Qualification.—At the final examinations held in Glasgow in July, the following candidates passed, and were duly admitted as Licentiates of the Triple Board:—

George Green, Richmond, Virginia.
James Stewart Durward, Edinburgh.
Muriel Keyes, Bradford.
William Ewart de Silva, Ceylon.
William Barton, Ecclefechan.
Benjamin Belilovsky, Poltava, Ukraine.
Frederick James Stevenson, Cambuslang.
Jessie Hayna Crawford, Glasgow.
Agnes Macilwraith Hill, Glasgow.
Karthegesa Poumah, Ceylon.
Andrew Gold, Larkhall.
Arthur Henry Jacobs, Glasgow.
Frank Arthur Smorfitt, Ripley, Yorks.
Sidney Scott Sumner, Edinburgh.
Jessie Melville Lyell Wright, Glasgow.
Percival Charles Holden Homer, Coventry.
William M'Mullan, Banbridge.
Israel Goldberg, Corstorphine.
Oswald Brunlees, Loughton, Lancas.
Douglas Chiene Scotland, Glasgow.
Thomas Poole, Glasgow.
James M'Glashan, Edinburgh.
John Stevenson, Glasgow.
May Constance Boughton-Leigh, Glasgow.
Thomas Hardie, Bonnyrigg.
Thomas Arnoldus du Toit, South Africa.

Appointments.—The following appointments have recently been announced:—

Glasgow University—Dr. Arthur J. Ballantyne, as Lecturer in Ophthalmology, in succession to Dr. A. Maitland Ramsay, retired.

Royal Infirmary—Dr. H. Wright Thomson, to be Visiting Surgeon to the Ophthalmic Institution, in succession to Dr. A. Maitland Ramsay, retired; Dr. Katherine Chapman, as Medical Electrician in place of Dr. James Riddell; Drs. Arthur M. Crawford and J. C. Middleton, as Assistant Physicians.

Victoria Infirmary—Assistant Physicians: Drs. R. M. Marshall and R. S. Taylor. Junior Assistant Physician: Dr. O. H. Mavor. Assistant Surgeon: Dr. W. A. Sewell. Junior Assistant Surgeons: Drs. N. G. W. Davidson, R. Tennent, and H. E. M'Coll. Surgical Tutor: Dr. S. B. Borthwick. Assistant Gynæcologist: Dr. R. A. Lennie. Extra Dispensary Gynæcologist: Dr. Ian D. Grant. Throat and Nose Dispensary: Dr. McKinnon.

Renfrewshire County Hospital, Darnley—Dr. Winifred J. Crawford, M.B., Ch.B.Glasg. (1916), as Medical Superintendent, and also to act as Assistant County Medical Officer, with particular reference to maternity and child welfare.

The Position of the Voluntary Hospitals.—In our pages in May last the financial position of the hospitals was considered in the light of the ever-increasing annual deficits which are reported from year to year. In Edinburgh and Glasgow strong efforts have been, and are being, made to improve the position by means of increased subscriptions both from annual givings and from special sources, and, we are pleased to note, with a considerable measure of success. In Glasgow, with its large industrial population, a special effort has been made to increase the annual donations from public works. The precarious financial position of the voluntary hospitals has been impressed on the minds of the workers by their delegates, and there has been an immediate and welcome response to their appeal. A scheme of regular giving has been formulated, graduated according to the wages earned by the industrial worker. This scheme, with certain modifications, has now been accepted as a basis for future subscriptions, and should, in the end, result in a very substantial increase of income for the larger charitable institutions. In London the position has been relieved for the time being by a large grant to the hospitals from a well-known public fund. In other large towns, with similiar institutions operating under the same overburdened conditions, the position is receiving earnest consideration. It is of interest in this connection to note what has been under discussion in Bristol, where there is, as in Glasgow, a relatively large industrial population. In the commercial world in these days there is a universal tendency towards combines, to lessen expenses of administration, to avoid overlapping of effort, and to diminish or get rid of the expenses necessitated by competition. This idea has been brought to bear upon the hospital question, and a scheme was devised to "amalgamate or co-ordinate the chief voluntary hospitals and other medical charities of the City of Bristol." The basal principle in the scheme, as taken from the *Bristol Medico-Chirurgical Journal*, was that the institutions joining in it would be represented on a General Council, which would be the central authority in co-ordinating the financial and general management of the institutions. This scheme, of course, at once cuts at the foundation of the whole voluntary hospital system, and threatens to sacrifice the ancient traditions and enthusiasm of the individual institutions. Such an amalgamation scheme seems to bristle with difficulties, involving as it must the rearrangment of charters, and the transference of earmarked endowments into a common fund, &c. The attempt, as stated, would appear to be to achieve the impossible. From the purely commercial standpoint a plausible working scheme might be evolved, but voluntary hospitals are charitable institutions and not commercial concerns. Remove the old fundamental sentiments of charity and beneficence from such organisations, replace them by commercialism, and we might as well prepare for appropriation by the State, a solution of the difficulty which has already strong support in certain quarters. In Bristol the scheme as propounded has, as might be anticipated, not met with great encouragement. One great stumbling-block has arisen, we are led to believe, from the proposed constitution of the Central Council, in which a fixed number of representatives from Bristol University loomed large. At the end of five years it was proposed that this Council would proceed to re-elect itself, with the addition of further representatives from the then existing hospital committees. The net result in the eyes of the general public appeared to be that, after 1926, the whole of the hospitals would be controlled by the University. This has stirred up a good deal of partisan friction, and further progress has meantime ceased. In Glasgow we have already under operation a scheme of co-ordination in teaching centralised in the University, though there has been no suggestion of extending the scheme to administration. Amalgamated effort might with success be directed in Glasgow towards the provision of a paying hospital apart from the voluntary institutions. It has been proposed by some—as in the London Hospital—to have a scheme of contributions from patients in the voluntary hospitals; but to those who know, such a scheme, unless in a part of the institution devoted exclusively to such patients, is unworkable. The day of the "private room system" in a general hospital is, by common consent of the staff, dead. At present there is a great gap between the charitable institutions and the nursing homes. There are many in our midst who would be willing to pay a moderate charge for care and treatment, but who cannot face the fees for residence and attendance in a nursing home. These, when in need, are reluctantly forced into the wards of a general hospital, and may or may not subscribe to its funds at the end of their period of residence. For such there ought to be in Glasgow some such provision as that which was established some years ago in Birmingham. At St. Chad's there a paying hospital was instituted, where the net cost of maintenance and treatment is reduced by the large number of patients treated, and where the fees of the medical staff, including specialists, are on a fixed reduced scale. The scheme has been run by medical men in association with business men, who have shared in financing the venture. It has proved eminently successful there, and on a limited scale in Edinburgh; and it appears to us that in a commercial city like Glasgow a similar scheme could be engineered on a large scale. The need for some such provision is urgent, though meantime the cost of building or acquiring suitable premises and the cost of upkeep would render the undertaking more precarious. At present the larger hospitals cannot adequately provide, at least on the surgical side, for the numbers who seek admission for treatment, and the provision elsewhere of a measure of accommodation for those of limited means would relieve to some extent the present congestion.

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Since the foregoing was written the question of the position of the voluntary hospitals has received notice in an editorial in the *Glasgow Evening News* (19th August), from which we quote the following:—

"It has been clear for some time past that hospitals are unable to carry on efficiently on the funds provided by voluntary subscription. Two alternatives were open to governors: to charge fees for the maintenance of patients or to invoke the aid of the rates. Now the Government has made the decision for them by embodying in the Ministry of Health (Miscellaneous Provisions) Bill a proposal to give municipal corporations and county councils power to assist hospitals out of the rates.

"In a sentimental sense it is regrettable that this step should have been found to be necessary, and present governors of hospitals will no doubt give voice to their regrets that the voluntary basis is to disappear, and that their own charitable activities will be complicated by interference by officials of the rate-providing bodies. Ratepayers, moreover, will grumble at having to provide the £16,700,000 necessary for the upkeep of British hospitals. And if rates are levied voluntary subscriptions will cease, until the entire burden rests compulsorily on the community.

"But it appears to us that the development is inevitable; Hospitals are indispensable; hospitals are not adequately supported by voluntary subscription. Therefore, they must be supported legally. In the meantime, the provisions of the Bill do not apply to Scotland, and it would be instructive to learn—before it covers this country—if our hospitals can function efficiently on revenues derived from charging for the maintenance of patients."

MEETINGS OF SOCIETIES.

THE ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

Session 1919-1920.

Meeting IV.—6th February, 1920.

The President, Mr. A. Ernest Maylard, *in the Chair.*

I.—THE BERGONIE CHAIR: AN APPARATUS FOR PRODUCING A PAINLESS, ALTERNATING, INTERRUPTED ELECTRICAL CURRENT.

By Dr. W. F. Somerville.

Dr. Somerville's communication will appear as an original article in a future issue of the *Journal.*

II.—MALIGNANT DISEASE OF THE LARYNX.

By Dr. W. S Syme.

Dr. Syme showed a patient whose larynx he had removed more than two years ago, on account of a growth which had filled the whole larynx. Since the operation the man had remained well and at work, and was able to speak, with a pharyngeal voice.

Dr. Syme stated that in this country malignant disease of the larynx was much more common in males than in females, while malignant disease of the lower pharynx was more common in women than in men. In China the opposite relation was said to hold, the alleged reason being that the men are served first at meals and eat their rice very hot.

The most common age for the onset of malignant disease of the larynx was 50 to 60. An important distinction must be drawn between intrinsic and extrinsic disease. In the intrinsic part of the larynx the lymphatics were scarce, but in the extrinsic part they were frequent. The intrinsic part included the cords, the anterior fornix, the subglottis, and the false cords; the extrinsic part included the other structures and tissues of the larynx.

Malignant disease of the larynx might remain as a local condition for a long time, perhaps for eighteen months, and should therefore be treated by early removal (by thyrotomy) of the growth and surrounding tissues. In extrinsic disease glandular infection was very common, hence by the time the patient was seen removal of the larynx was seldom to be advised: the case shown was the only one of the kind in which Dr. Syme had operated in this way. He accordingly emphasised the importance of early diagnosis in cases of hoarseness. The suspension apparatus was of great value both for inspection and for the removal of portions of suspected tissue for examination.

III.—A CASE OF MULTIPLE ORIENTAL SORES (LEISHMANIASIS) TREATED BY INTRAVENOUS INJECTIONS OF ANTIMONY.

By Dr. Adam Patrick.

The patient shown had been infected in Mesopotamia early in 1919. When seen by Dr. Patrick he had in all seven ulcers, of which five were on the legs. Leishman-Donovan bodies were found by Dr. Dunn. The treatment adopted was by bi-weekly intravenous injections of tartar emetic, eleven injections being given, increasing from 0·04 grn. to 0·12 grams. The ulcers had completely healed, leaving brown pigmented scars.

Dr. Bankier Sloan said that in Mesopotamia oriental sores often occurred on the face, and asked if much scarring was left?

Dr. Syme asked if the sores occurred on mucous surfaces?

Dr. Patrick, in reply, said that in the case shown the ulcers had been present for five months, and had healed with smooth scars. The scars did not occur on mucous membranes. It was pretty certain that the disease was spread by some kind of biting insect.

IV.—LAST FOUR INCHES OF ILEUM, CÆCUM, AND ASCENDING COLON, WITH INTUSSUSCEPTED APPENDIX VERMIFORMIS, REMOVED BY OPERATION (ILEO-COLECTOMY), FROM A CASE OF ULCERATION OF BOWEL, WHICH WAS THOUGHT, AT FIRST, TO BE MALIGNANT, BUT WHICH PROVED TO BE DUE TO TUBERCLE.

(Specimen shown, also microscopic sections made by Dr. Haswell Wilson.)

BY MR. ARCHIBALD YOUNG.

The patient was a woman, Mrs. H., aged 34 years, but she looked much older when admitted to my ward in the Western Infirmary. She was a patient of Dr. Madeline Archibald, of Govan, who sent her to me by reason of her progressive loss of weight and of strength, and particularly on account of persistent severe pain deep in the right iliac fossa, a pain which evidently weighed heavily on the patient's mind. It had been present for nearly two years, but had greatly increased in the later months, entirely resisting treatment of a simple nature.

The following is a brief note of the case:—

The patient was admitted to my ward on 18th December, 1919, in a somewhat weak state, suffering much from deep-seated pain in the right lower abdomen. She was much emaciated, her weight being only 5 st. 3½ lb. She stated that she had had pain in the right lower abdomen for nearly two years, but this had much increased after the birth of her sixth child, seven months before, and it had extended latterly somewhat up into the side. She had had frequent feeling of sickness, but had been actively sick only occasionally. Her bowels had been, for long, inclined to constipation, but latterly, when they did move, there was a tendency to diarrhœa. She had felt herself losing strength notably. Menstruation was regular, but recently the periods were somewhat prolonged, and she had a somewhat profuse vaginal discharge. There was no history of febrile disturbance.

On her admission, one was struck by her emaciation, and by her anxious, worried look, as of one who had suffered much pain. Her complexion was unhealthy, her tongue furred, her whole appearance suggesting cachexia. The abdomen was not unduly prominent, but rather inclined to be retracted. No tumour could be definitely felt, nor was there any great tenderness anywhere, but a moderately tender area on deep pressure in the right iliac fossa. There was little or no rigidity. Patient's weakness was profound. While in hospital, both before operation and afterwards, there was no temperature reaction. Urination was normal. During the ten days patient was under observation there was no sickness, and the bowels responded to enemata readily, there being nothing abnormal in the stools.

On 25th December, *i.e.*, a week after admission, a thorough examination of pelvic and abdominal viscera was made under an anæsthetic. Pelvic examination was negative, but abdominal examination revealed the presence of a small, rather firm lump, about the size of a chestnut, which was thought to occupy the region of the first part of the ascending colon. It was felt only on deep palpation, and it rolled somewhat freely under the palpating fingers. A malignant tumour of the cæcum or ascending colon was suspected, and operation was advised and accepted.

On 29th December laparotomy was performed, the abdomen being opened to the outer side of the right rectus. The "tumour" was found to consist of a mass of doubtful nature, at the site of, and evidently including, the appendix, which was obviously intussuscepted. Though the appearance of the mass did not suggest that of a malignant growth, it was decided, nevertheless, to excise the last four inches of ileum, the cæcum, and the ascending colon, also the intussuscepted appendix and the mass embracing it. This decision was come to partly by reason of the very considerable glandular involvement in the neighbourhood. The extirpation of these glands was a good deal more difficult than was the removal of the bowel, requiring the following up of an extensive series extending well up behind the posterior parietal peritoneum, and as high as the posterior aspect of the duodenum and pancreas. The ileum was anastomosed with the transverse colon. There having been no soiling of the peritoneum during the procedure, the abdominal wound was closed completely, in layers.

The after-progress of the case was almost uneventful, though there was a tendency to diarrhœa during the later period of convalescence, a tendency by no means uncommon during the early period following upon extirpation of the colon, but which, in this case, may have had its origin in further ulcers, either of small or of large bowel. Patient left hospital on 28th January, 1920, greatly improved in health generally, having gained 5 lb. in weight. The appearance of the specimen, after partial hardening in formalin, may be shortly described. The mucous surface of the ileum showed a few superficial ulcers, as did also the mucous surface of the ascending colon. In the latter the ulcers were mostly disposed transversely. Around the partly intussuscepted appendix, on the mucous aspect of the cæcum, there was a somewhat extensive area of ulceration, closely approaching the ilio-cæcal valve, but the valve itself was, in fact, quite free from involvement in the ulcerative process. It was recognised that the naked eye appearance of the ulceration suggested a tuberculous process rather than a malignant one, and the specimen was submitted to Dr. Haswell Wilson for examination.

Dr. Haswell Wilson reports that there is no sign of any malignant process; that, in fact, the ulcers are typically tuberculous, and that the glands submitted to microscopic examination show only inflammatory hyperplasia.

Microscopic sections by Dr. Haswell Wilson are submitted for inspection. They show typical tuberculous granulation forming the floor of two of the ulcers.

The chief reason for bringing this case before the Society was, undoubtedly, that it exemplified a condition which is but scantily referred to in general surgical literature, viz., the condition of intussusception of the appendix. This is, it is true, no more than an incident in the case, but in view of the fact that it receives so slight reference in the literature, and that for two of the existing references I have been myself responsible, I thought it well to add this one also.

The two references to which I have alluded concerned two cases which I had the honour of bringing before this Society on 5th May, 1911. One case was that of a young child, aged 4½ years, who had fairly acute and recurring abdominal pain for several weeks, in whom a partial and recurring obstruction of the bowel was suspected. Operation disclosed a well-marked intussusception of the appendix. The organ was excised, with a ring of the cæcal wall around it. Recovery was normal, and the abdominal attacks ceased.

The other case was that of a woman of 24 years, who was operated on by reason of highly acute symptoms suggesting an ordinary acute appendicitis. The appendix was found acutely inflamed, it is true, but its terminal part was specially swollen, while its proximal part was intussuscepted into the cæcum. In this case it was found possible to reduce the intussusception, and thereafter the appendix was removed by the usual cuff method. It should be noted, in this case, that the cæcal wall for some distance around the base of the appendix was much thickened, almost suggesting tumour growth. The thickening was, however, probably purely of an inflammatory nature.

While looking over the subject recently, my attention was called by my assistant, Dr. Scouler Buchanan, to yet another specimen of the same condition which he had seen in my cupboard, and which was obtained from a patient operated on in May, 1917. I had quite forgotten its existence, and, indeed, its occurrence. I am able to show it here, and I have looked up the notes made of the case, at the time, in my Ward Journal.

In this case, it will be seen, the associated condition—as in the second case recorded in 1911—was appendicitis, but it was an appendicitis of a much more chronic type, with recurrent attacks extending over a period of several months. The appendix was found buried in adhesions, and definitely intussuscepted into cæcum. It was removed, as in the first recorded case, along with a local ring of cæcal wall, and recovery was uneventful.

The following are the details of this case:—

Another recent case of intussusception of the appendix.—W. C., a woman, aged 20 years, admitted to my ward, Western Infirmary on 12th May, 1917, with tenderness and pain in the right iliac region. She stated that she had had "indigestion," with abdominal pain, for several months, but during the fortnight immediately preceding admission to hospital she had very frequently recurring pains in the right side. Four days before admission the pain became more acute, causing patient to take to her bed.

On admission there was marked rigidity on the right side of the abdomen, and some rigidity, but less marked, on the left side. There was a palpable swelling in the appendix region but there was no marked tenderness.

The case was not regarded as urgent, and operation was deferred until 16th May, *i.e.*, four days after admission.

At operation the abdomen was opened by the usual "gridiron" method, and the appendix was sought for, but it was not easily found. There had been, evidently, recurrent inflammatory attacks, and the appendix was eventually found buried in firm adhesions, partly intussuscepted, and invaginated into the cæcum. It was excised, with a local ring of cæcal wall, the resultant opening in the cæcum being closed by suture in two layers, and the raised peritoneal coat and some of the bands of adhesions were sutured over the area. The abdominal wound was sutured completely, also in layers.

The after-course was quite uneventful, the patient making a perfect recovery, being dismissed from hospital on 4th June, *i.e.*, nineteen days after operation. The specimen is here shown for comparison with that in the case mentioned on the billet.

These four cases, then, of intussusception of the appendix vermiformis were associated with four different conditions—

1. Tuberculous ulceration of ileum, cæcum, and colon.
2. Acute appendicitis.
3. Chronic recurrent appendicitis.
4. No obvious organic lesion of bowel, but with a history of a well-marked tendency to constipation (the case of the child, first recorded).

It seems to be reasonable to assume, in all four cases, that the exciting cause in the production of the intussusception of the appendix was, as in so many cases of intussusception of bowel, local irritation exciting excessive peristalsis of the organ.

I should like here, when exhibiting this specimen, to refer to one other aspect of the case, viz., the error in diagnosis, and the confusion between ileo-cæcal tuberculosis and malignant disease of that part of the bowel. It must have been the experience of most surgeons to make such an error, and even to have done a more radical operation, based on it, than the pathological findings afterwards have shown to be called for. It is certainly not the first time that I have fallen into the same error. Perhaps it may not even be the last. It is well to draw attention to the possibility of such a confusion in diagnosis, though I confess I do not find it possible to lay down any hard and fast lines on which to base a differential diagnosis. Malignant disease of the bowel, particularly of the large bowel, is notoriously difficult to diagnose in many cases—more especially in the earlier stages—and it must be remembered that both conditions are apt to be somewhat variably associated with constipation and/or diarrhœa. Both are apt to be marked by progressive loss of weight and of strength. Both may lead to considerable glandular enlargements in the abdomen, and either may at any time be complicated by intestinal obstruction. Either may be marked by febrile attacks, or may be quite free from any temperature reaction. One can only plead for the maintenance of an open mind in diagnosis, and for the adoption in every case of an entirely unprejudiced outlook. It is just here that the so-called "lightning diagnosis" is liable to lead to error.

The details of an illustrative case are given in what follows. The specimen is still in my possession, and is shown here to-night..

Another case of excision of the ileum, cæcum, and ascending colon in which malignant disease was suspected, but which proved also to be due to tuberculous ulceration at the ileo-cæcal region.—J. M., a woman, aged 46 years, was admitted to my ward in the Western Infirmary on 2nd June, 1917, giving the history that she had had an attack of acute pain in the right lower abdomen eighteen months before, and that similar attacks had occurred in the interval, sometimes lasting for three or four days, and accompanied, when at all severe, by sickness and vomiting. At first, tenderness was present only during the attack, but latterly it had been almost constantly present. There was a history of almost constant constipation during the past year, requiring, and increasingly, the use of aperients; but in the last three months there had been some diarrhœa.

On admission a mass, tender to pressure, could be made out in the right iliac fossa, and it was ascertained that all the pain had been associated with this region. In shape the mass was roughly cylindrical, and it rolled under the palpating fingers to some extent. Its movement was limited to a certain degree, however, but it seemed distinct from the pelvic and from the lateral abdominal wall.

Operation was performed on 15th June, 1917, *i.e.*, thirteen days after admission. The laparotomy wound was made to the outer side of the right rectus muscle, and the ilio-cæcal region was at once explored. The ileo-cæcal junction was found to be the seat of a hard "tumour" mass, which, from its hardness, the manner in which it was anchored down to the pelvic floor, its location, and its bulk, was thought to be of a malignant nature. It was decided, accordingly, to extirpate it, along with the adjacent bowel, and a considerable mass of enlarged glands in the neighbourhood. Considerable difficulty was experienced in raising it, and, subsequently, in removing it. Lateral anastomosis of ileum and transverse colon was performed. The ascending colon was then cut through well above the growth, and the ends were closed. The ileum was similarly divided at a little way from the valve, and the last loop of the ileum, with the cæcum, appendix, and ascending colon, was excised, along with a large segment of mesentery and the enlarged and indurated glands. The abdominal wound was closed in layers, completely.

The after-course was normal, patient being dismissed on 28th July, *i.e.*, six weeks later, well.

The report of the pathologist was as follows:—(1) *Gland from mesentery:* "Invaded by tuberculous granulation tissue;" (2) *Tissue from ileo-cæcal region:* "Tuberculous ulceration of intestine, with deep infiltration of muscle."

In this case, as in the other, the pathological report was by Dr. Haswell Wilson, to whom I have to express my indebtedness for his willing help.

In a short discussion which followed—

Mr. Maylard suggested that intussusception of the appendix might be more common than was supposed, because of the occurrence of reduction due to pulling on the appendix in the course of operation.

Mr. Alex. MacLennan referred to two cases of cystic appendix and intussusception which he had reported in the *Clinical Journal.* In the first case he had thought the condition one of malignant disease, and had removed the whole ileo-cæcal junction. In the second case the probable diagnosis, after x-ray examination, was a concretion in the cæcum. When seen at the operation there was a large pear-like swelling.

REVIEWS.

Gray's Anatomy, Descriptive and Applied. Twenty-first Edition. Edited by ROBERT HOWDEN, M.A., M.D., D.Sc. London: Longmans, Green & Co. 1920. (42s. net.)

WHEN a book has attained its twenty-first edition criticism naturally develops into congratulations to those responsible for the production. A perusal of the present edition of *Gray's Anatomy,* which has been edited by Professor Howden, the occupant of the Chair of Anatomy in the University of Durham, proves this attitude to be correct. The descriptive part is excellent, and is beautifully and copiously illustrated. The revised notes on applied anatomy, fittingly placed, are invaluable to the student. They will stimulate interest at a time when he is apt to be overwhelmed with the mass of cold, hard facts required of him by his examiners. On the whole the notes are good, though exception might be taken to that on puncture of the bladder through the rectum, which like the operation might well be abandoned. The printing and get-up of the book leave little to be desired, and published at two guineas, it ought to maintain its popularity and usefulness as one of the standard books on anatomy.

Surface Anatomy. By CHARLES R. WHITTAKER, F.R.C.S.Ed. Third Edition, Revised and Enlarged. London: J. & A. Churchill. 1920. (7s. 6d. net.)

THIS is the third edition of the author's *Essentials of Surface Anatomy,* which appeared in 1906, and which was intended to afford a means of "quick revision of the salient points of surface marking." In the present edition the text has been amplified to nearly double its original extent, and there are scattered through the book numerous plates of line-drawings. As before, the contents of paragraphs are indicated by marginalia, a method which facilitates reference. The matter is distinctly readable, the plates are clear, and the printing of high quality. The quality of paper used is not up to the high level of the contents, and reminds us of war-time at its worst. This defect notwithstanding, the book is one which we have pleasure in highly recommending.

Surgical Anatomy. Part I, Second Edition. By C. R. Whittaker, F.R.C.S.Ed. Catechism Series. Edinburgh: E. & S. Livingstone. (1s. 9d. net.)

This part of Mr. Whittaker's little work deals with the upper and lower limbs. Of its kind the "Catechism" is very good, and will be found useful as a "refresher" to details, many of which are apt to fade as the student reaches his final year. The issue of a second edition is proof of the demand existing for such a work.

Manual of Surgery (Rose and Carless). By Albert Carless, C.B.E., M.B., M.S.Lond., F.R.C.S. Tenth edition. London: Baillière, Tindall & Cox. 1920. (30s. net.)

We have always regarded this text-book as one of the best in the language, and as embodying essentially the teaching of British surgery. Books emanating from particular schools are apt to be rather local in their methods and descriptions; "Rose and Carless" is now old enough to have outgrown this fault. It is five years—five full eventful years, as the author reminds us in a gracefully-worded preface—since the last edition was published. What this book contains of new material are the new ideas—or, at least, revivified old ideas—born in the experience of war surgery; the treatment of infected wounds, the mechanical management of compound fractures of long bones, treatment of wounds of the lungs, and the plastic surgery necessary for repair of defects. The story of the development of purely war surgery and of the portions of new knowledge which may be grafted on civilian surgery is very well told—

the author making public the debt we owe to, amongst many others, the Thomas splint, the "orthopædic" work of Jones, the face surgery work of Newland and Gillies. It is suggested that some of the war surgery will have to be, in time, expunged from text-books; probably that may be so, but not till civilian surgery has completely absorbed the best of what we have learned in the war. The book is considerably larger and its price is higher. The pictures in the text are not too numerous, and those included are well chosen; the letterpress is of good size and uniformly clear. The collection of all the *x*-ray photographs printed on art paper at the end of the volume is quite a commendable feature. The new edition undoubtedly maintains the already high reputation and almost affectionate place held by its predecessors.

Elementary Organic Chemistry. By F. PILKINGTON SARGEANT. Ph.C., F.C.S. Second Edition. London: H. K. Lewis & Co., Limited. (4s. net.)

A USEFUL book, short, clearly written, and with just sufficient material to render it suitable for junior students of medicine. The subject is arranged in ten chapters, and each chapter deals with an organic group of interest in medicine. The book is of small size, and of necessity the descriptions of the various groups are short and elementary, but there is sufficient for the purpose of the elementary student. That a second edition has been called for is a testimony to its usefulness. The equation given on p. 70 under phenol-sulphonic acid requires correction (an "H" too many).

A Text-book of Gynæcological Surgery. By COMYNS BERKELEY, M.A., M.C., M.D., and VICTOR BONNEY, M.S., M.D. Second Edition. London: Cassell & Co., Limited. 1920. (42s. net.)

THE first edition of this book appeared in January, 1911, and it was the intention of the authors to produce the second edition in the autumn of 1914, but the advent of the war prevented this. In this edition it has been found necessary to make great alterations in the text, and also considerable additions. The section dealing with the plastic surgery of the vagina has been practically rewritten. The treatment of displacements has been very fully discussed, and the mechanism of the normal support of the canal dealt with. The subject of operative shock and its treatment has been expanded, and a number of operations, not before included, have been described in detail, notably abdomino-perineal excision of the rectum. Some may say this is hardly a gynæcological operation, but a gynæcologist must be prepared to do such operations under certain circumstances. About 100 new figures have been added to the book, so that it is now profusely illustrated. The illustrations are so clear that the different steps of the operations can be easily followed, and they form a great feature of the book. Post-operative complications are very fully dealt with, and blood transfusion is fully described. The first edition we strongly recommended, and this one is certainly an improvement on the former. To advanced students and specialists the book will prove a mine of information. It reflects great credit upon both authors and publishers.

Handbook of Skin Diseases. By FREDERICK GARDINER, M.D.
Edinburgh: E. & S. Livingstone. 1919. (6s. net.)

THIS small book is likely to be warmly welcomed by students who can seldom afford to devote much time to the study of diseases of skin, as it deals chiefly with the diseases most frequently seen. The book is the direct outcome of lecturing experience, and is intended to convey concisely the essentials required by the student. We might venture to suggest, indeed, that Dr. Gardiner should carry out his idea a little further. It would, in our view, be an improvement if he gave us a little more detail in describing the commoner diseases, even if he cut out entirely the less common conditions in order to retain the present size of the book. The author follows his former chief in objecting to the use of the term eczema. The name eczema may be open to objection, but the condition indicated thereby deserves more detail in description and treatment than it has received here. It is, however, a useful handbook.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

EDITED BY GEORGE MACINTYRE.

MEDICINE.

Post-Influenzal Tuberculosis. By Timothy J. Murphy, M.D. (*Boston Medical and Surgical Journal*, 28th August, 1919). -The author, quoting from the experience of various observers on the incidence of tuberculous foci discovered *post-mortem*, points out that owing to the prevalence of tuberculosis in the human race, post-influenzal tuberculosis should be defined as a reactivation of an old tuberculous focus, following a more or less severe attack of influenza. From a study of the statistics of the mortality from tuberculosis of the lungs in several American cities before, during, and after the influenza epidemics of 1833, 1847, and 1889-90, he fails to find any material increase in the incidence of tuberculosis following these epidemics; and with reference to the recent pandemic, the figures so far published offer very little evidence of an increase in the number of cases of tuberculosis following influenza. He has also studied the statistics published by various American Tuberculosis Centres on the incidence of influenza in people with arrested, mild, and advanced tuberculosis, and summarises his conclusions as follows :—

1. That epidemics of influenza are not followed by any measurable increase in the incidence of tuberculosis.
2. That in people with mild or arrested tuberculosis a higher incidence of influenza is evident than in those with the advanced type.
3. That in people with active tuberculosis a certain degree of immunity is produced by the constant presence of a low grade chronic inflammatory process of the respiratory tract, which protects them to some extent against a frank invasion of influenza.
4. That cases of glandular tuberculosis, especially the cervical and tracheobronchial type of children, show a very high incidence of influenza, but very few frank cases of pulmonary tuberculosis follow.
5. Individuals in the prime of life, apparently free from physical defects and previous history of illness, are more susceptible to influenza.

—A. Muir Crawford.

SURGERY.

Duodenal Fistula. By Stuart McGuire (*Surgery, Gynecology, and Obstetrics*, May, 1920).—Although the aggregate number of cases of duodenal fistula is large, yet only a very small number occur in any one surgeon's practice. Consequently, very little has been written on the subject. The condition may follow operations on the duodenum, or it may appear after injury to the duodenum in the course of operations on other organs. Fistula may become evident immediately after operation, but it is more common for the first leakage to appear on the fourth or fifth day of post-operative treatment. A small fistula may heal spontaneously, but as a rule the digestive secretions cause the opening to enlarge progressively. In the latter case the patient's condition rapidly becomes desperate because of the effect of discharges on the wound and surrounding tissues, the inability to retain nourishment, and the rapid loss of body fluids.

Suturing of the duodenal opening is not always feasible, although sometimes when this is too difficult a posterior gastro-enterostomy may be accomplished.

The author describes a case in which the duodenum was wounded during an operation on the gall-bladder. A very large fistula became evident on the ninth day. All liquids taken by the mouth escaped as rapidly as they were swallowed. A midline incision was made in the abdomen, and jejunostomy performed according to the technique of Charles Mayo. After three weeks of tube-feeding the patient was encouraged to take nourishment by the mouth, and it was then discovered that the fistula had healed. Patient was dismissed cured.—Charles Bennett.

Congenital Anomaly of the Duodenum and its Surgical Significance. By Leonard Freeman (*Surgery, Gynecology, and Obstetrics*, May, 1920).—The author describes a form of duodeno-jejunal kink which depends upon the persistence of an embryonic condition. The duodenum, instead of emerging from beneath the transverse mesocolon to the left of the vertebral column, emerges to the right because its transverse and ascending portions are completely covered by peritoneum. The duodeno-jejunal angle, however, is fixed or suspended to the root of the mesocolon by a duodenal fold of fœtal life. The kink thus produced is sharpened by the downward pull of the free loop. To free this obstructive condition it may be necéssary to denude the bowel considerably, and care must be taken not to injure the inferior mesenteric vein or the left colic artery.—Charles Bennett.

A New Method of Fixing Wire in Bone Surgery. By J. M. Neff and J. G. O'Malley (*Surgery, Gynecology, and Obstetrics*, June, 1920).—The authors have used the method described below in many different types of cases, but they do not advocate its use in fractures of long bones where strong support is needed to hold fragments in apposition. It has been found very efficient in approximating fragments at the lower end of the radius and lower end of humerus, also in fractures of patella and olecranon.

Silver or copper wire is passed through the drilled fragments and is caught at both ends by forceps. The wire is now drawn taut in opposite directions so as to hold the fragments in accurate apposition. On the near aspect of the bone the terminal portions of wire are now in lateral and parallel contact. Over these adjacent parallel wires a small quantity of liquefied zinc chloride is applied. With an ordinary soldering iron a small drop of electrician's solder is applied to the wires, and they are welded by running the tip of the hot iron over them. The unused portion of wire is cut off with bone-cutting forceps.

This method gives a continuous metallic band which maintains its original tension indefinitely, a smooth surface at the site of union, no irritation from twisted ends, and no possibility of breakage.—CHARLES BENNETT.

Books, Pamphlets, &c., Received.

Mental Deficiency (Amentia), by A. F. Tredgold, M.D., F.R.S.Edin. Third edition, revised and enlarged. London: Baillière, Tindall & Cox. 1920. (25s. net.)

L'Infection Bacillaire et la Tuberculose: Chez L'Homme et Chez les Animaux, par A. Calmette. Paris: Masson et Cie. 1920. (55 fr. net.)

Cunningham's Manual of Practical Anatomy, revised and edited by Arthur Robinson. Seventh edition. Vol. III: Head and Neck. With 233 illustrations, many of which are coloured. London: Henry Frowde and Hodder & Stoughton. 1920. (12s. 6d. net.)

Orthopædics for Practitioners: An Introduction to the Practical Treatment of the Commoner Deformities, by Paul Bernard Roth, M.B., Ch.B.Aberd., F.R.C.S.Eng. London: Edward Arnold. 1920. (10s. 6d. net.)

Air Sickness: Its Nature and Treatment, by René Cruchet and René Moulinier. With a preface to the French edition by Dr. P. Pachon; and an Introduction to English readers by Wing-Commander Martin Flack, M.B. Translated from the French by Rosslyn Earp, M.A., M.R.C.S. London: John Bale, Sons & Danielsson, Limited. 1920. (5s. net.)

War Against Tropical Disease, being Seven Sanitary Sermons addressed to all interested in Tropical Hygiene and Administration, by Andrew Balfour, C.B., C.M.G., M.D., B.Sc., F.R.C.P.Edin., D.P.H.Camb. London: Published for Wellcome Bureau of Scientific Research by Baillière, Tindall & Cox. 1920. (12s. 6d. net.)

Plastic Surgery of the Face, based on Select Cases of War Injuries of the Face, including Burns. With original illustrations. By H. D. Gillies, C.B.E., F.R.C.S. With chapter on "The Prosthetic Problems of Plastic Surgery," by Captain W. Kelsey Fry, M.C., R.A.M.C., and "Remarks on Anæsthesia," by Captain R. Wade, R.A.M.C. London: Henry Frowde and Hodder & Stoughton. 1920. (£3, 3s. net.)

Studies in Neurology, by Henry Head, M.D., F.R.S., in conjunction with W. H. R. Rivers, M.D., F.R.S., Gordon Holmes, M.D., C.M.G., James Sherren, F.R.C.S., Theodore Thompson, M.D., and George Riddoch, M.D. Vols I and II. London: Henry Frowde and Hodder & Stoughton. 1920. (£3, 3s. net per set.)

GLASGOW.—METEOROLOGICAL AND VITAL STATISTICS FOR THE FOUR WEEKS ENDED 28TH AUGUST, 1920.

	WEEK ENDING			
	Aug 7.	Aug. 14.	Aug. 21.	Aug. 28.
Mean temperature, . .	54·0°	58·7°	53·4°	56·0°
Amount of rainfall, . ins.	1·73	0·24	3·08	0·01
Deaths (corrected), . .	236	297	235	270
Death-rates, ...	11·1	13·9	11·0	12·7
Zymotic death-rates, . .	0·7	1·4	0·6	1·0
Pulmonary death-rates, .	2·1	2·2	2·0	1·9
DEATHS—				
Under 1 year, . . .	45	51	42	66
60 years and upwards, .	64	91	72	71
DEATHS FROM—				
Small-pox, ...	2	5	..	6
Measles, ...	2	2	...	1
Scarlet fever, . . .	...	2	1	1
Diphtheria, . . .	2	1	...	...
Whooping-cough, . .	2	7	1	1
Enteric fever, . . .	...	...	...	2
Typhus, ... ,	...	...	...	...
Cerebro-spinal fever, . .	1	...	...	..
Diarrhœa (under 2 years of age),	8	17	11	16
Bronchitis, pneumonia, and pleurisy, . . .	29	38	28	30
CASES REPORTED—				
Small-pox, ...	14	4	16	15
Cerebro-spinal meningitis, .	4	6	2	1
Diphtheria and membranous croup, ...	20	30	29	24
Erysipelas, . . .	22	8	12	22
Scarlet fever, . . .	61	58	56	70
Typhus fever, . . .	...	1	...	...
Enteric fever, . . .	1	4	14	7
Phthisis, ...	41	29	12	19
Puerperal fever, . .	2	3	3	10
Measles,*	16	26	21	14
Ophthalmia neonatorum, .	15	11	9	7

* Measles not notifiable

SANITARY CHAMBERS,
GLASGOW, 1st September, 1920.

THE

Glasgow Medical Journal.

No. IV. October, 1920.

ORIGINAL ARTICLES.

AN UNDESCRIBED CONDITION OF INFANCY AND ITS TREATMENT.*

By G. HERBERT CLARK, M.D., D.P.H.,
Weir Assistant to Professor of Materia Medica, University of Glasgow;
Assistant Physician, Western Infirmary, Glasgow.

The condition to which I wish to refer is one which I have identified in two children (a further case has since been identified), one of which is now quite normal and the other becoming so slowly. The outstanding symptoms are—(1) idiocy, (2) depression, (3) fibrillary twitchings in the muscles, (4) jerking movements of the limbs, (5) convulsions, and (6) inability to balance.

In the first case, which I saw in autumn, 1910, the child appeared to be normal until he was about 4 months old, when the fits and startings began. When I saw him he was 15 months old. The fits had been infrequent at the beginning but later became of daily occurrence, and often there were two or more attacks in one day, and "startings" were frequent. The child did not talk, walk, nor take any interest in things going on around. He recognised neither father, mother, nor brother, and was equally contented with anyone. He could not sit up unsupported and could not stand. When laid down he remained lying as placed for some time. There were bursts of temper and crying. The head was large; the anterior fontanelle was open about one inch across and concaved. The body was well formed and plump, but the appearance of the child's eyes was very abnormal, there being an unatural, unseeing stare. A toy or object held close to the eyes elicited no response. From time to time one or other limb jerked, and fibrillary twitchings were observed in the muscles. The fits were very striking when observed. The first one I saw came on very suddenly, and the flexor muscles of the whole body became suddenly and forcibly contracted. The body

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* Read at a meeting of the Royal Medico-Chirurgical Society, held on 19th March, 1920.

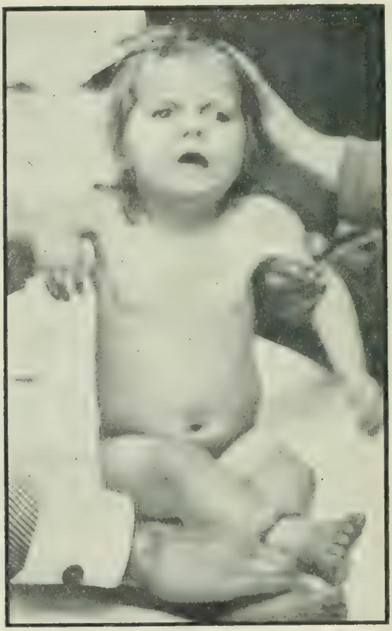

FIG. 1.

Emily H., as seen on 18th September, 1919. She was quite unable to sit unsupported, and her limbs twitched from time to time. Fits occurred once or more daily.

doubled forward with some force, and a rapid, noisy expiration resulted. The arms and legs were forcibly flexed, and the head was bowed over the chest. The child remained thus for about five seconds, and then the muscles relaxed and the body lay helpless for a similar time. Involvement of the eyes was referred to by the mother, but this was not seen by me. In all, the convulsions lasted for from fifteen to twenty minutes, and the child was very weak for some time after.

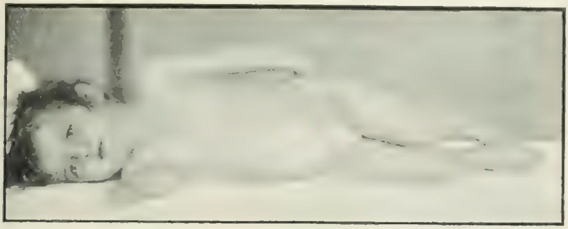

FIG. 2.

FIG. 3.

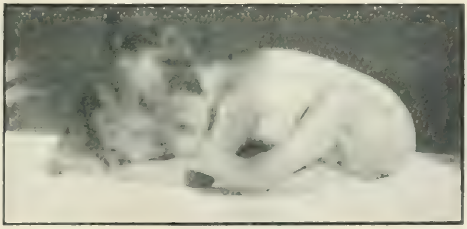

FIG. 4.

FIGS. 2, 3, and 4.—The child would remain in these postures for long periods. On attempting to make her sit erect, she fell into the position shown in Fig. 3, and remained thus. A fit occurred immediately after these photographs were taken.

The attacks were not always of this flexor type, but varied from time to time.

The electrical reactions were tested, but the results were inconclusive. There were never present "carpo-pedal spasm," nor Trousseau or Cvostek phenomena.

At the time referred to, experiments were being done in the Physiology Department of the University upon the effect of removal of the parathyroids in animals. The animals developed tremors, startings, and convulsions, and showed stupor and depression. The symptoms in the child seemed to bear a resemblance to the symptoms in parathyroidectomised animals, and, as other treatment had been ineffective in improving the condition, I determined to try the effect of feeding with parathyroid. I found it impossible to obtain pure parathyroid

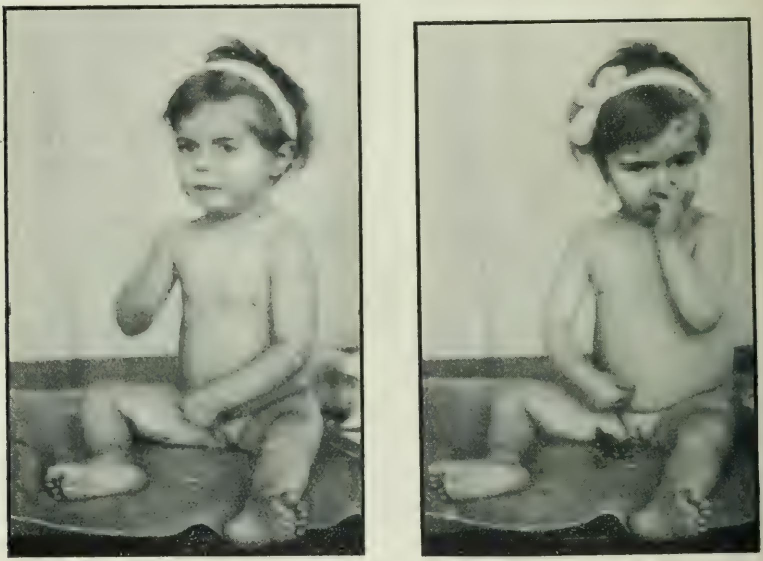

FIG. 5. FIG. 6.

Taken on 27th October, 1919. On 16th October tablets containing approximately $\frac{1}{10}$ grain each of dried parathyroid gland were commenced and given thrice daily. The startings and twitchings became less severe and less frequent, and had disappeared by 24th October. There was improvement in the child's alertness, and she played with toys. Altogether, 3·3 grains of the dried substance had been given when the photographs were taken.

gland, but obtained from Messrs. Parke, Davis & Co. a dried preparation of thyroid gland in tablets which contained parathyroid as an impurity. The infant was placed upon this preparation, ½ grain twice daily, and began to improve almost at once. After some three weeks the fits and twitchings had entirely ceased and have never returned.

I have followed the development of this child since then, and he is now absolutely normal, although a little backward in some subjects at school. The gland tablets were continued for six months and then gradually stopped. The fact that thyroid gland and parathyroid gland substance were present together rendered it quite impossible to say which was responsible for the result; and it was therefore a matter of great interest when last September a child of 2½ years was brought to the Western Infirmary Dispensary suffering from the same condition.

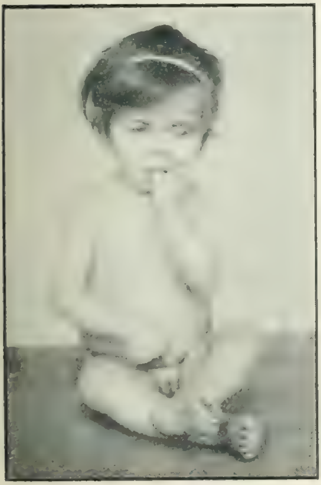

FIG. 7.

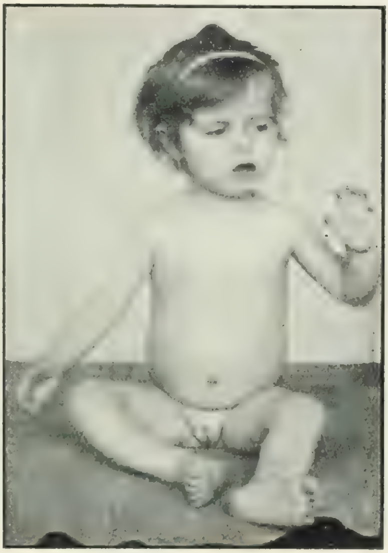

FIG. 8.

On 27th October the parathyroid tablets were discontinued; these photographs were taken on 4th November. The child was still able to sit erect, but convulsions had returned, and the child was listless and taking no notice of what happened around her. Fibrillary twitchings and startings were marked, and convulsions had occurred.

This child, Emily H., had been fairly normal until about a year old, and then commenced to have twitchings and startings, and, later, convulsions from time to time. This was accompanied by an attitude of indifference to surroundings, and growing depression. She was said to have lost weight latterly, and treatment had failed to influence the condition. The family history was quite negative.

The child was photographed at the first visit, and photographs were taken from time to time during treatment.

On admission the child was very well formed, and, in fact, quite plump. Dentition was satisfactory; the anterior fontanelle was not quite closed.

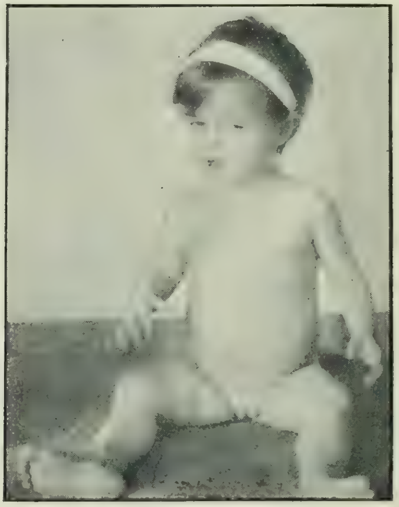

FIG. 9 (taken on 10th November, 1919).

On 4th November small doses of thyroid gland were commenced, but had no influence in arresting the retrograde progress. At the end of a week this was then discontinued, as the child was almost in as bad a condition as on first admission, and three or four fits were occurring daily.

The child was unable to sit up unless supported, and although somewhat restless, would remain in the most extraordinary positions for quite long periods. For example, she would lie prone with her face on the ground and make no effort to move. When an effort was made to make her sit up, she fell forward with her head between her legs, and remained like that for five minutes or more. Her head rolled about on her shoulders, and her eyes were staring and unseeing. She took no interest in her surroundings nor in anything that happened near to her, but lay moaning and depressed upon her bed. She was quite unable to walk or talk, and could only support herself on her feet when held, and even then only for very short periods. From time to time one or other or more than one limb showed spasmodic startings, and fibrillary twitchings were observed in the muscles. The reflexes were everywhere sluggish. At least once every day a convulsion occurred. They were ushered in by a cry, and developed rapidly. The muscles of the whole body were affected simultaneously in some fits, but not so in others. In fits of that type the muscles contracted tonically, and remained contracted for about five seconds, then relaxing for a similar period, became tonically contracted again. The contractions were tetanic, and closely resembled a strychnined frog. The diaphragm was also involved, and air was sucked in noisily with each spasm. The fits lasted about fifteen minutes and were accompanied by crying.

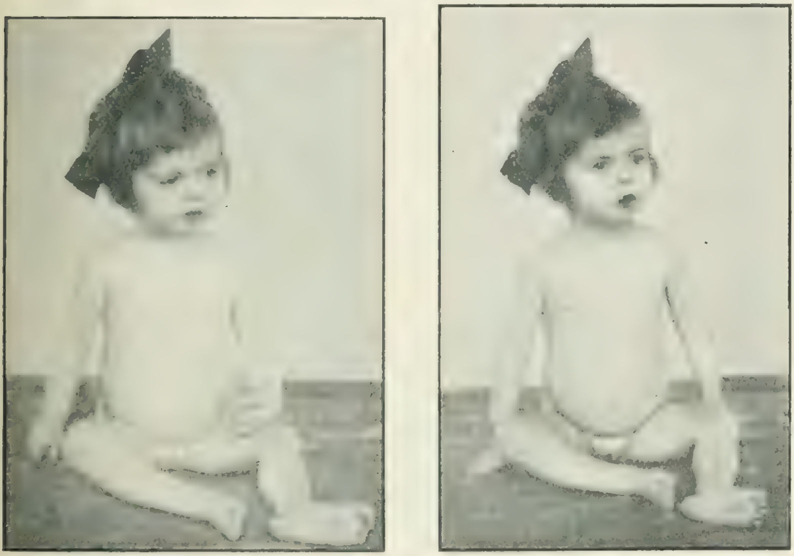

Fig. 10. Fig. 11.

On 10th November the parathyroid treatment was recommenced, and the photographs shown were taken on the 18th. Patient could stand unsupported; convulsions had ceased, and she was making poor efforts at walking and talking.

The spasms gradually became less and less severe and passed off. In some attacks the flexors were principally involved, as in the case referred to before.

Observations were made from day to day, and the electrical reactions tested. The electrical excitability was not increased to any extent during quiescence, but were not tested during an attack. "Carpo-pedal spasm" and Trousseau and Cvostek phenomena were never present. During an attack, a mechanical stimulus caused a general spasm.

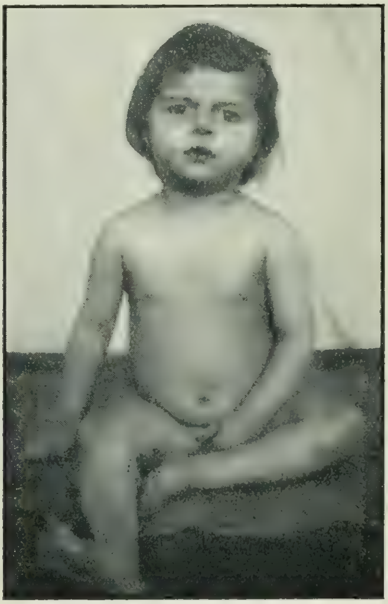

Fig. 12.

Photograph taken on 24th November. Improvement was continuous. She was walking without difficulty, and playing like a child of eighteen months or so. Her attempts at talking were like those of a child of about that age.

On 16th October the child was put upon parathyroid gland tablets, $\frac{1}{10}$ gr. thrice daily. On the 17th and 19th fits occurred—two on the 19th. The startings and twitchings gradually became less frequent, and on 24th October had quite disappeared. There was a progressive improvement in the child's alertness from day to day, and she played with a doll or toy.

On the latter date she was taking notice, and resented very much the taking away of a toy or article of food. She occasionally smiled and chattered to herself without clear articulation. The helpless moaning had stopped, and she was able to sit up, and even to stand while holding on to the side of her crib. On 27th October the parathyroid treatment was discontinued for the purpose of finding out if progress was interfered with. Although there had been no fits for five days, immediately the parathyroid was discontinued they returned with great violence. In the first twenty-four hours after stopping the treatment four convulsions occurred. The child was listless and apathetic, and took no notice of what was occurring around her. She had stopped playing with toys. At the end of a week she was rapidly falling back to the state on admission. By 4th November muscular startings and fibrillary twitchings had returned, convulsions occurred twice, three times and even four times a day. For the purpose of finding what influence, if any, the administration of thyroid gland would have on the condition, a dose of $\frac{1}{8}$ grain in tablet form was given thrice daily. The dose was small, so as to eliminate, if possible, the influence of any contained parathyroid substance. If thyroid was effective, it should at least arrest the rapidity of the return to the child's previous state. After a week of this treatment it was discontinued, as the child was still falling back quite as rapidly.

On 10th November parathyroid gland tablets ($\frac{1}{10}$ gr. thrice daily) were recommenced, and at the end of a week the change was almost incredible. The fits were diminished in number and in intensity. In appearance and in behaviour she was absolutely changed. Her eyes were bright and noticing, she played with toys, and took an interest in food and surroundings. She could stand quite unsupported, although she could not walk. She still made only poor efforts at articulation, and her mental development was very defective but improving. Photographs taken on 24th November and 1st December show the continued improvement, and her mental improvement corresponded. Fits had disappeared when she was re-admitted for a few days for further observation on 3rd February, 1920. She was then running about and playing. She was making efforts at articulation, although not very successfully. She showed greatly improved intelligence, although she was very backward for her age.

She was again seen on the 9th March, and was still improving in every way, and trying to talk. The parathyroid gland substance was still being continued.

The history of these two cases and their improvement as recorded suggests that the latter case at least, and probably the former also, are cases of parathyroid deficiency.

In animals, Noël Paton and Findlay[1] and other writers find the following symptoms develop after thyroparathyroidectomy:—

1. The most marked and constant change in animals is an alteration in disposition. They become depressed and sluggish, and tend to sit or lie crouched in a corner, and are with difficulty induced to move.
2. Emaciation and increased electrical excitability of principal nerves during an attack.
3. Muscular spasm.
4. Muscular tremors—paw shaking.
5. Fibrillary twitchings.
6. General tonic spasm, which passes off with subsequent clonus resembling an epileptic fit.
7. In some dogs paretic symptoms show from the first.
8. Sometimes early and sometimes later in the course of the condition marked disturbances of balance occur.

The similarity between the symptoms is obvious, but it should be observed that in the animals as much as possible of the glands are removed, and that consequently the symptoms are exaggerated.

The condition described in my two cases would appear, therefore, to be parathyroid tetany, similar to what develops in animals after removal of these glands, and treatment with dried gland substance causes immediate improvement, which is arrested if the treatment is stopped. It is uncertain how long treatment with parathyroid gland substance should be continued, but judging from the first case, a state of health is reached when it is no longer required. In the second case the gland substance has been discontinued twice, and on both occasions the child was not so well, but recovered on the administration being resumed.

REFERENCE.

[1] "The Parathyroids," *Quarterly Journal of Experimental Physiology*, vol x, 1916, *q.v.* for extensive references.

A PLEA FOR THE EARLY RECOGNITION OF SYPHILIS.*

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Though syphilis in its primary phases may not be of special interest to many individual members of a society such as this, yet the whole subject of venereal disease has within recent years become one of such vital national importance that it is not necessary for me to make any apology in choosing this subject for my paper.

There is, I think, no subject within the whole range of medicine that has come more to the forefront since the outbreak of war, and no subject that has been more discussed outside the medical profession than that of venereal disease.

Before the war this subject was certainly not one of special political, municipal, or social interest. The "Mother Grundy" outlook was predominant with these bodies. Unfortunately, "Mother Grundy" could not bear to look too closely at this problem: it would have shocked her delicate sensibilities, so she passed it by on the other side, or, like the ostrich, she preferred to bury her head in sands instead of facing the danger that beset her. The discussion of the problem was taboo as far as the public were concerned; the disease was to them a hidden mysterious plague. Even the medical profession was not entirely free from this Grundy taint; it is no exaggeration to say that the majority of doctors gave the matter the cold shoulder, their attitude being one of indifference, if not disgust. The student was inadequately taught to begin with, and was required to pay the minimum of attention to the subject.

With the introduction of arsenical preparations ("606") in the treatment of syphilis, and the discovery of the treponema pallidum, there was given a stimulus to the subject, and even the lay public took considerable interest in the striking curative results recorded from the use of this new drug; but there was no great awakening from a social and national point of view.

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* Read at a meeting of the Royal Medico-Chirurgical Society held on 19th March, 1920.

The war has entirely changed this *laisser faire* attitude. The tables have been completely turned during the space of a few short years, and the whole question has now become one of prime importance amongst social problems. The National Council for Combating Venereal Disease has been formed (November, 1914), with the express purpose of enlightening the public mind on this dire malady. The cloak of timidity or false modesty has been cast off; almost every leading daily paper has discussed the subject in a serious vein; almost every political, literary, and social magazine has had long articles dealing with this problem in a frank, outspoken way, unthought of before the war. Only a few months ago the *XIXth Century* had an article entitled "Prophylaxis in Venereal Disease." The attitude of men and women has changed entirely. They are keenly interested in, and are prepared to look frankly into, this serious and menacing problem. In some countries, too, the women are taking a very active interest in this movement which so concerns them, and in Australia, I believe, there has been so much propaganda that the women are demanding from their would-be husbands a Wassermann test before marriage. In America, where notification has been adopted, the propaganda movement is perhaps more in evidence; in New York City educational lectures are given in factories, warehouses, and public halls at suitable hours during the day. Special cinema films have been prepared to educate the public on the ravages of venereal disease, and very excellent films illustrating the temptations and pitfalls which beset the youth of the nation.

When one thinks of the sequelæ of syphilitic infection, the social and family calamities that arise therefrom, there can be no gainsaying the fact that syphilis is one of the greatest evils of our civilisation. Eradicate syphilis—and, I might add, its co-partner alcohol—and a new lease of life would be given to the nation. The task of combating syphilis and other venereal infections is one which concerns not only public corporations and patriotic societies, but every member of the medical profession; in fact, it can only be by the very active and intelligent co-operation of the latter that this thorny problem can be adequately handled.

The key to preventing the ravages that follow syphilitic infection is early diagnosis and early treatment, as, the earlier the diagnosis, the more certain the cure. It was the teaching at one time by some authorities that, in a case of suspected syphilitic sore, the patient should not be subjected to treatment until the diagnosis had been clinched by the appearance of a secondary eruption. But the day of such dangerous doctrine is fortunately past—it is universally condemned. We have advanced so far in our knowledge of the disease as to be able to say that there are few diseases more amenable to treatment and where the prognosis is more hopeful—provided the diagnosis is made early, and the best modern treatment undertaken.

It is not uncommon for the medical attendant to overlook the question of syphilis when a patient presents himself with a genital sore. This may be due either to the want of experience and the false impression that all syphilitic sores are hard, or the medical officer may think of the sore being possibly syphilitic, but is not alive to the dangers of delay in the diagnosis and treatment, and neglect making a diagnosis until secondary symptoms develop, or he may even be thoughtless and careless in this matter. Here are three examples:—

1. A soldier (married) reported to his M.O. with a genital sore. He was ordered to wash the sore daily with Condy's fluid. The M.O. kept the patient under observation seven weeks, seeing him twice a week and, I understand, remarked to patient that the sore might be syphilitic, but took no steps to confirm his suspicions. The soldier was demobilised on the seventh week; three weeks later a rash appeared, and he reported again to the same medical officer, who sent him to hospital (for diagnosis) with a profuse secondary syphilide. This officer made the fatal mistake of not getting his suspicions confirmed at once by dark ground examination; as a consequence, an early primary case which could have been easily cured was left for ten weeks until the whole system got saturated with spirochætes, when

much more prolonged treatment would be required, and a more doubtful prognosis given. During these ten weeks he was a menace to the community. He may possibly have infected his wife or any other person, a whole train of disasters resulting therefrom.

2. Another case showing the mistaken diagnosis at a later stage. A soldier reported with a rash at his depôt in London. It was diagnosed and treated as scabies. Shortly after he was transferred to Edinburgh. He reported to his M.O. there, again diagnosed as scabies and sulphur treatment continued. Next he was transferred to Glasgow and again treated as scabies. Ultimately, after two whole months had elapsed, he landed in hospital and was found to have a very profuse secondary syphilitic eruption.

3. Another example is that of a man who evidently had a chancre on the lip. The medical attendant was skilful enough to diagnose an extra-genital syphilitic infection, prescribed grey powders (not the best modern treatment), and informed the man he had most probably got infected from a woman. This treatment was continued for several weeks when a roseolar rash developed. He states that he was then seen by half a dozen more medical men—some stated that the condition was syphilitic, others disagreed. Grey powders were continued, and it was not until a few more weeks had elapsed that he was sent into hospital, as his condition was not improving. On admission he was found to have profuse secondary lesions on the lips and buccal mucous membranes—teeming with spirochætes.

What happens, and what are the possible consequences resulting from such a faulty diagnosis or from a delay in the diagnosis of a specific infection?

Among a certain class, and among those where more intelligence might be expected, subsequent exposures are almost certain to take place—the infected man infects another clean woman, possibly more, and as often as not his own wife may be the victim.

If the case runs on until the secondary eruptions are in full bloom, with lesions on the mucous membranes, there is added a further source of danger, namely, contamination from the lesions on the lips and mucous membranes. For example, let me cite the case of an officer contracting a chancre on the forehead, which was cut by another man's infected mouth in a bicycle accident.

A patient in the advanced stages of secondary syphilis, with his whole system permeated with spirochætes, will naturally require more careful and more prolonged treatment than in the primary stages, and his chances of complete cure are distinctly diminished.

One will naturally ask to what extent are the chances of complete cure diminished if treatment is delayed till well into the secondary phase: in other words, what is the difference in prognosis when the treatment is started in the primary stage and the secondary stage? To assess this difference with any degree of accuracy is difficult. All we can do at present is to state the result of the Wassermann test at the end of a routine course of treatment in these different stages. The general finding is that—

In early primary cases with negative Wassermann—after full treatment (8 to 10 injections of "606")—the Wassermann is negative in 100 per cent and remains negative.

Late primary cases with Wassermann reaction becoming positive, the Wassermann reaction is negative in 75 per cent to 85 per cent after treatment.

In secondary cases Wassermann reaction is negative in 65 per cent after the same course of treatment.

Leonard (Manchester Lock Hospital) gives the following results :—

	Wassermann Reaction.
Early and medium primary, .	100 per cent negative.
Late primary, ...	90 ,, ,,
Early secondary, ...	90 ,, ,,
Late secondary, ...	80 ,, ,,

Dr. Ivy McKenzie gives the following figures :—

	Wassermann Reaction.
Early primary, ...	100 per cent negative.
Late primary, ...	75 ,, ,,
Secondary cases, ...	69 ,, ,,

It is quite evident from these figures that the prognosis becomes steadily worse the longer the delay in treatment. Even these figures are misleading, and do not state the case clearly, as they do not take into consideration the relapses that certainly take place in the late primary and secondary cases after one such course of treatment. Were this done, the contrast in the results of treatment in early primary cases and the secondary cases would be much more striking.

The more advanced the disease is the more troublesome and the longer the treatment.

It must also be borne in mind that the central nervous system is early invaded, which is the most serious aspect of syphilitic infection, the importance of which cannot be too strongly insisted on.

This invasion is manifest by the changes in the cerebro-spinal fluid—an increase in the lymphocytes and globulin, and a positive Wassermann reaction.

A lymphocytosis frequently appears in the early secondary stage, sometimes before the eruption and before the presence of globulin can be detected, and before the Wassermann reaction becomes positive.

These cases where the diagnoses are delayed may turn out to be of the intractable type in spite of treatment. Relapses may occur. Silent and steady changes may take place in the meninges and central nervous system or arterial system, which in time become manifest. The health is impaired more or less according to the case, and for a time there may be total incapacity for work.

The individual is therefore a loss to the community, and may sooner or later become a burden, which the healthy members have to support. The same train of events may well happen in the case of the individual or individuals who have become infected from this primary case. In the case of women being infected you are all well aware of the great risks to the unborn generation. It needs little imagination to follow the almost tragic events which may result from the delay in the diagnosis of a syphilitic infection, or from a faulty diagnosis.

The sequelæ are far too serious for one to look upon the matter lightly. A little thought and a little extra time and trouble taken to clinch the diagnosis when the case is first seen will, in the majority of instances, prevent these disastrous results, and no one can deny that they are not disastrous, both from the individual and national point of view.

My plea, therefore, is—Let the diagnosis be made at the earliest possible moment, and treatment started at the earliest possible moment. Apart from the question of prophylaxis and the ethics of this subject, there is no other way in which the medical profession can help so much to stamp out this scourge, and so help to maintain the health of the race.

For the early diagnosis it is necessary that the medical practitioner be conversant with primary syphilis and the non-syphilitic sore, or if not conversant with its varied manifestations, he should be alive to the dangers of every venereal sore, the vital importance of early diagnosis and treatment, and take steps to have a diagnosis made at the earliest possible moment by dark ground examination, and gland puncture if necessary, by some one fitted to do so.

Every venereal sore should be regarded as possibly syphilitic until it has been proved the reverse. This rule applies to the expert as well as to the inexperienced, because no one, however expert, is justified in assuring a patient he has not contracted syphilis, from one examination. Were only this precaution taken it would do much to lessen the number of cases that progress into the secondary stage, and we would have advanced a great step towards the mitigation if not the eradication of syphilis from the community.

If every medical student by the time he graduates, and every medical man throughout the length and breadth of this country, were fully alive to the importance of the early diagnosis of syphilis and early treatment, and were facilities provided for this, I venture to state that there would be a new era of health and happiness for the next generation. A syphilitic rash would be as rare as a typhus rash, and the varied syphilitic infections of the nervous and arterial system would be very greatly diminished.

It must be remembered that a patient may get double infection from one exposure, *i.e.*, an infection with Ducrey's bacillus and S. pallida; consequently a soft sore which develops after a short incubation period of three to ten days will, after the necessary incubation period of four to six weeks, take on syphilitic characters; or a syphilitic sore may appear at an entirely different site on the genitals. It is wise, therefore, never to say a patient has not contracted syphilis until you have kept him under observation for at least two months—preferably three months—after the appearance of the sore, and when at the end of that time the blood gives a negative Wassermann reaction. Let me instance the following example:—

This patient was admitted with what looked a typical non-syphilitic sore perforating the frænum. The sore, however, gradually extended over the frænal area of the glans and under surface of the prepuce, with a good deal of destruction of tissue. As the possibility of the sore being syphilitic was then suspected, during the ensuing three weeks four dark ground examinations were done, all with negative results. Shotty adenitis also developed in one groin, making the diagnosis of syphilis still most probable, but unfortunately I overlooked the question of gland puncture. Wassermann reaction was done on the ninth week and found negative. In the tenth week the Wassermann reaction was found partially positive, and with this a few clearly syphilitic papules appeared on the abdomen. Gland puncture, which I had overlooked, was then done, and S. pallida found on the first examination. The mistake I made was not doing gland puncture three weeks previously, which might possibly have revealed the S. pallida, and consequently three vital weeks were lost, to the detriment of the patient.

I would like to emphasise the importance of gland puncture in all doubtful cases, where examination of the sore gives negative findings. It is easily done, but the S. pallida is not always easily found. They require hunting for.

The recognition of a primary syphilitic sore.—Looking back to my early days in medicine, the impression left on my mind, both from the teaching I got and of my own reading, was—that a syphilitic sore was hard (the classical hard Hunterian chancre), with characteristic parchment-like infiltration, and that a non-syphilitic sore had no infiltration and was consequently soft. This, I think, is the dominant impression left in the minds of very many. It is just this impression, and a very false one, which I wish to dispel.

After one has seen many cases of primary chancres, the conclusion one comes to is that the descriptions ordinarily given are very inadequate. Some important types are not even described. There are varieties of chancres which differ materially from text-book descriptions, and are yet quite typical of syphilis. Some syphilitic sores practically never become indurated to a degree sufficient for clinical guidance, even although they may attain a large size: and in that type of sore which does tend to become hard and indurated we should aim at getting the diagnosis made early, almost before the characteristic induration has had time to develop. Briefly, the general characteristics of syphilitic chancres, as described in text-books, are:—

1. *Incubation period.*—This is on an average four to six weeks, but may be less or much longer. In examining a venereal sore one should arrive at one's opinion of the sore before asking the patient any questions. If you rely on the patient's story you may be misled, because it is very difficult to obtain a true and accurate statement from the patient. A patient will assure you that he has never been exposed to venereal infection, or has not been exposed for several months, &c., and if you believe these statements, which are often at variance with the facts, you will probably be misled. This can perhaps be explained by the fact that the average patient has a horror of syphilis, and consequently tries to persuade himself and the doctor of the utter impossibility of his case being syphilis, and so will proceed to prove its impossibility by inaccurate or even consciously untrue statements. He is "briefed for the defence," and it will often need a firm and wary cross-examination to elicit the truth. Apart from this self-preserving tendency, the patient almost invariably blames his last exposure, whereas on inquiry it may be found he had several previous exposures, from any of which the disease may have been contracted.

A diagnosis should therefore be made from the clinical appearance of the sore, and too much weight must not be placed on the averred incubation period.

2. *Singleness of the sore.*—The old dictum that a syphilitic sore is always single and a soft sore multiple has been handed down from text-book to text-book, and is still a common impression. (From an analysis of a large number of sores, it seems that about 80 per cent of chancres are single.) There is nothing astonishing about this plurality of sores, as the number must simply depend on the different points of entrance of the S. pallida. There is also the possibility of the inoculations being successive, as immunity is only conferred ten days after the first chancre has appeared. The number should not be made a point of importance in making a diagnosis, as both kinds may be either single or multiple, though soft sores are more commonly multiple than syphilitic ones.

3. *Induration.*—This is a valuable sign, sometimes pathognomonic, but by no means an invariable sign. Some syphilitic sores never have any induration, or so slight as not to be perceptible to the finger, and consequently of no clinical significance. Some sores remain small and heal without induration. The type of sore that occurs on the skin of the shaft of the penis is so slightly indurated that it is imperceptible, and the sore can be readily bent on itself. It is not uncommon to find induration, which is due to inflammatory thickening in the case of soft sores, especially in soft sores concealed behind a phimosed prepuce.

4. *Adenopathy.*—Adenitis corresponding to the region in which the chancre is situated is a very valuable sign.

This glandular enlargement takes place slowly and is not accompanied by acute inflammatory signs, and consequently is practically painless. There is no peri-adenitis, and so the glands remain discrete, and are of a very firm consistency. The adenitis, however, varies considerably. In genital chancres one or both groins may be affected, and where one side only is affected it is interesting to note that it is commonly the side opposite to that of the sore that is affected, *i.e.*, a sore on the left side of the penis being associated with right-sided adenitis. Just as it should be our aim to get the cases before there is induration, so it should be our aim to get the cases and diagnose them before there is adenitis. An inflammatory or suppurative adenitis must not be taken as excluding syphilis—as this sometimes occurs. Rarely no perceptible adenitis is present.

5. *Size of the chancre.*—This is of no value whatsoever in the differential diagnosis of a hard and soft sore. Syphilitic sores may remain quite minute and hardly noticed, and heal without leaving any evidence behind.

6. *Absence of pain.*—Generally speaking, syphilitic sores are less painful than soft sores; but this, too, is not a point of any importance.

An important aid to the diagnosis of a syphilitic sore is the condition known as syphilitic œdema (non-inflammatory). This œdema seems to be due to the blocking of the lymphatics and often causes phimosis. There are none of the signs of acute inflammation, and the tip of the phimosed prepuce often assumes a livid appearance which is very diagnostic.

7. Soft sores bleed more readily than syphilitic sores.

Let me give the history of another case which illustrates important points already mentioned.

This patient was exposed to infection on 27th November, 1919 (the exposure prior to this was four months previous). On 9th December (*i.e.*, an incubation period of twelve days) he noticed a very small sore close to the frænum. He reported at once to his medical attendant, who labelled it a "soft sore" and gave him a wash. Patient states the sore was never larger than a match head and was quite healed by 7th January, 1920, and there was not the slightest evidence of any sore when he came under my observation later. On 16th January he developed an inflammatory swelling in left groin. On 30th January a bubo was lanced, and a small quantity of pus found. Thereafter the bubo healed quickly.

On 16th February a few spots appeared on his trunk, *i.e.*, eleven weeks after exposure.

On 26th February he reported to a V.D. clinique with a typical papulo-squamous syphilide: Wassermann positive. There was no adenitis in groins or elsewhere. In this instance there was probably a double infection, and the sore when first seen may clinically have had the characters of a "soft sore." The moral is clear. Be exceedingly careful before you finally decide a sore is non-syphilitic, and even then keep your patient under observation, if possible, three months. In this case eleven weeks elapsed before the first evidence of secondary syphilis appeared, and it might quite well be longer.

The other interesting features of the case are—

1. A sore may remain very small and insignificant, heal without leaving any trace, and yet be syphilitic.
2. A syphilitic genital sore may be accompanied with an inflammatory suppurative adenitis, especially if there is a double infection.
3. A syphilitic sore is occasionally unaccompanied with any characteristic adenitis of the neighbouring lymphatic glands.

In conclusion, let me quote a saying of Sir Wm. Osler's—"Know syphilis in all its manifestations and relations, and all other things clinical will be added unto you."

CASE OF ISCHÆMIC CONTRACTURE OF FORE-ARM, OCCURRING AFTER FRACTURE OF BOTH BONES OF THE LEFT FORE-ARM; TREATED BY MANIPULATION AND SPLINTING.*

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This case is brought before the Society as the result of a recent conversation with a fellow member who expressed his desire to see it, and hear the details of its history and treatment. It is not brought as being, in any real sense, unusual, either in its onset and course, or in the method of treatment followed. It has, however, I expect, sufficient inherent interest to justify its presentation to the Society, not only because of the favourable result, but because the condition is, fortunately, uncommon enough to have been met with by a comparatively small number of practitioners, or, indeed, of general surgeons.

The condition of ischæmic paralysis—with or without contracture—has been met with in a variety of lesions. In the surgery of the recent war, for example, it was, unfortunately, a more frequent occurrence than it is in ordinary civil practice. Most typically, it occurred in gunshot injuries of axillary and brachial vessels: less often in the case of the smaller arteries and veins, such as the radial and ulnar. It was seen, also, in injuries to the vessels of the lower limbs, but much less often than in the case of the upper limb. Much has been written about the condition in these injuries by Tinel and many others. Its association not merely with vascular injury, but also with varying degrees of injury to the larger nerve trunks, and the plexuses, such as the brachial, has been noted by numerous writers. Certainly the syndromes were liable to considerable variation, according as there was, or was not, a simple lesion of vessels, or an associated lesion of larger vessels and nerves. The possibility of such association is not difficult to appreciate, when one remembers the close anatomical relation of the larger nerve trunks and the larger vascular channels, *e.g.*, the axillary vessels, and the cords of the brachial plexus; the brachial artery and vein in the arm, and the median nerve; the popliteal vessels and nerves, &c.

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* Read at a meeting of the Royal Medico-Chirurgical Society, held on 16th April, 1920.

The finer pathology of the condition in such lesions is subject to much discussion, and is yet far from decided. Which element plays the more important part in causation—whether the vascular or the nerve element—is still unsolved, possibly unsolvable. Into this I have no intention of entering in the course of this communication.

Nor was it my intention to deal with types of the condition under consideration met with in war surgery. The case I bring forward is of quite another kind, viz., one of those occurring in ordinary civil practice, such as are known by the name of perhaps the first writer on the subject—Volkmann—who described the condition about the year 1881 or 1882. It has been known since as Volkmann's ischæmic contracture.

The condition has been met with chiefly as a complication of fractures of the fore-arm bones, or of the lower end of the humerus, *i.e.*, specially in fractures near the elbow. It seems unnecessary to predicate any gross injury, at the time of fracture, of any of the larger vessels, though it is quite possible that such may occur, and, in some cases, contribute. The now commonly accepted view is that its development is the result of, or an accident in, treatment, and Volkmann regarded it as due to a partial obstruction of the circulation in the limb, both arterial and venous, such as might be caused by the constriction of splints, plaster of Paris, or bandages. I think it is clear that, in some cases at least, there was also a nerve element, either direct or as a part of the effect of the ischæmia exerted on the vitality of the larger nerves in the part of the limb involved.

The development of the characteristic clinical picture is liable to considerable variation in respect of time, but in some cases it has been found to be very rapid; its definite establishment has sometimes taken only a day or two, and even less than eight or ten hours, though, of course, its full development requires much longer, *i.e.*, to the ultimate completion of the atrophy and contracture.

If the patient is not under immediate observation during the early hours or days after a fracture, and after the application of splints, the beginnings of the complication may escape notice, and only when the condition is pretty fully established, perhaps, the calamity—for it almost amounts to that—is recognised. But if the case is, as it should be, in the earlier stages, kept under observation, the course of events is somewhat as follows:—

There is generally some complaint of pain, not only in the part actually involved in the fracture—say, the fore-arm—but also often in the fingers. The fingers are found to become, and remain for some time, swollen and discoloured. Later, possibly, this dark discoloration may give place to pallor, but the early engorgement is such that it should draw attention to the need for investigation, and probably for relaxation of the splints, &c.

If not speedily relieved the condition progresses, the muscles of the fore-arm—chiefly the flexor-pronator group—developing a board-like firmness, with, at first, considerable and painful swelling, and there follows on this a more or less rapid degenerative change in the substance of the muscle fibres, going on even to a sort of hyaline necrosis. In the worst cases, this leads to a permanent loss of all recuperative power. While the flexor-pronator muscles are most characteristically affected, I do not think the other muscles escape altogether, or indeed substantially, provided they are exposed to the same deleterious influence. Certainly in the case I show to-night the extensor muscles were affected to some extent, though the flexor-pronator group suffered most, and the characteristic flexion-contracture developed in typical fashion.

This further stage in the progress of the Volkmann lesion is marked usually, as in this case, by a rapidly increasing and ultimately extreme, contracture of the fingers upon the palm, as a whole; or, in some cases, by the development of a contracture of the "*griffe*" type, the fingers being dorsal-flexed at the metacarpal-phalangeal joints. Usually, even where the contracture is well developed, some degree of relaxation of the fingers may be got by placing the wrist in the position of marked flexion, so compensating for the shortening of the long flexor muscles. In some of the more profound cases, as, indeed, in this case, the amount of relaxation obtainable by such flexion of the wrist is almost nil.

I may say that, in the case I have to show, the contracture was, at one time, so pronounced that the fingers were so constantly and so firmly palmar-flexed as to press most uncomfortably on the palm, and cause irritation there.

Whether with or without definite associated injury to nerve trunks, there is frequently met with some degree of sensory defect of the affected part, and, in the case of the fore-arm, as in my case, there is even considerable loss of sensibility to light touch, prick, and temperature perception. Deep sensibility is not often altogether lost, and indeed is frequently exaggerated, and accompanied by much subjective pain, at least for some considerable time.

Nerve conductivity and excitability of muscles to electrical stimulation, both Faradic and galvanic, may be, in the slighter forms, not much prejudiced: but in the more severe cases, as in this case, they are effected to a greater extent. Something approaching or actually amounting to the reaction of degeneration may be obtained; it was so in the case in question, in respect of the muscles of the median group, and in some of the muscles of the ulnar group, in the hand. In most cases, however, though Faradic excitability may be lost, or may be induced only with strong currents, galvanic excitability is preserved, if somewhat altered. Polar reversal is not common, except, as said, in the most severe cases, and those with a very definite nerve element.

From what has been said, it will be evident that the condition is a serious one from the point of view of the future usefulness of the hand and fore-arm, all the more that, the condition once well developed, it is not readily amenable to treatment, at least until profound, and generally permanent, contractures have been brought about.

It is all the more imperative, then, that the conditions that may lead to the development of the paralysis or contracture should be well known, and that they should be obviated. Here, as in so many other conditions, prevention is infinitely preferable to any other form of treatment.

It is regrettable, therefore, that I have to confess to the failure on my own part to apply that healthy rule. In fact, the condition occurred in a case under my own care from the first, treated by myself for the fracture, and under personal observation in my ward.

Following on a fracture of both bones of the left fore-arm, slightly above the middle, the patient, a lad of 11 years, was brought to my ward in the Western Infirmary, where I fixed his limb in splints myself the same evening, and I had him in my ward thereafter. From the first he complained of pain in his fingers and in the fore-arm. From the first he refused to make any sufficient effort to move the fingers, and resented any attempts at passive movements of the fingers, even within the limits allowed by the splinting. I have to confess that we failed to appreciate properly the meaning of his complaints, and of the apparent disability, and even the slight swelling and engorgement of the fingers failed to force on my mind, until too late, the necessity for taking the splints off and readjusting them. Not that I did not see the lad regularly, or examine his limb and splints. I did so, but I was so convinced that I had not fixed splints and bandages unduly firmly, that it was not till six days later that I took them off and readjusted them. By that time, and probably long before, the harm was done. It is as well that this confession should be made, for it may help others to avoid an error that is fraught with so grave harm to one's patients that it is worthy of being recorded.

One is so accustomed to teach students the paramount necessity of avoiding just such a pitfall that one is perhaps apt to think oneself immune to the danger. And the calamity of such an error in treatment is so great that not even the fortunate ultimate result in this case can wipe away from my remembrance the horror of realisation that came to me when I appreciated what was in course of development, and when I reflected on the unfavourable prospects usually associated with Volkmann's contracture.

Before describing shortly the course of the case in detail, let me say a very few words as to the lines of treatment possible, apart from that of preventive treatment already referred to.

Apart from the ordinary forms of treatment, such as massage, passive and active movements, electrical treatment, and so on, which may prove beneficial within very restricted limits, but which cannot lead to correction of a definite contracture, or lengthening of permanently shortened muscles, the methods of treatment have been chiefly of two kinds, viz., correction of the contracture by cutting down on the flexor tendons at the wrist, splitting and lengthening them individually; or approximating the origins and insertions of the contracted muscles, either by resection of appropriate portions of radius and ulna, or by displacing the origins of the contracted muscles to a lower level, and implanting them a little way down the ulna. I have no experience of either method, but each has its supporters. A case of the kind treated by resection of radius and ulna was shown by one of our members, Dr. Mill Renton, at a meeting of the Society on 12th April, 1912. The immediate result seemed good, but I do not know what the ultimate result may have been.

These open operative methods of treatment, whether involving lengthening of tendons by surgical means, or requiring resection of bone or displacement of muscular origins, can be regarded as justified only if there is not available some more simple or less severe form of procedure. Even at best, the former procedure may leave some adhesion of tendons and consequent impaired movement, while either of the latter procedures means a permanently maiming operation in some degree, and each is bound to be doubtful in its effect.

The method followed in my case was on the lines of a method described by Jones, of Liverpool, but differs from it in detail.

Shortly, the procedure was as follows[1]:—Under an anæsthetic the four fingers were separately stretched, and fixed fully, or almost fully, extended in individual moulded splints, made from sheet tin, the splints having been sized previously and fitted for the corresponding fingers of the other hand, requiring only to be reversed, and each covered in advance with lint. The necessary degree of extension of the fingers was only obtained by fully palmar-flexing the wrist, and even then the metacarpal-phalangeal joints could not at first be extended, only the inter-phalangeal joints. The finger splints being secured, the maintenance of the palmar-flexion of the wrist was obtained by the application of a long metal splint, duly padded, and fixed on the extensor aspect of the fore-arm and hand. The whole combination of splints was secured by appropriate bandaging. There was at first some anxiety regarding the circulation in the fingers, so much so that I paid a special visit to the ward in the latter part of the day, just to satisfy myself that all was well. As a matter of fact, accommodation was soon established, and no special discomfort was experienced afterwards.

The splints were not disturbed for about a fortnight, when,[2] again under an anæsthetic, they were readjusted, the flexion of the wrist was reduced, and the extension at the metacarpal-phalangeal joints was increased, the splints being adapted accordingly. A fortnight later[3] the lad was again anæsthetised, and the fingers and wrist were further manipulated, then fixed up again with the wrist still flexed, and the metacarpal-phalangeal joints more extended. Twenty days later,[4] under an anæsthetic, the splints were removed, and hand, fingers and wrist freely manipulated, the splints being then reapplied, with the contracture almost fully corrected. Sixteen days later[5] an anæsthetic was again administered, the splints were removed, and, after manipulation of the joints, a moulded and padded splint was applied on the palmar aspect of the hand and fore-arm, extending from beyond the finger-tips to at least two-thirds up the fore-arm, this splint being considerably dorsal-flexed at the wrist. The special finger splints were now discontinued. Less than a week later the long palmar splint was also removed, and has not since been reapplied. Massage was instituted and continued for some time. Incidentally, I may say, the lad had also electrical treatment. I saw him again, once or twice in the following weeks, and then lost sight of him, the cure not being complete as regards the wasting of muscle, and in respect of sensory defect, which he had in marked degree at first, but being apparently quite satisfactory as regards the contracture, and giving good prospects of a useful limb.

I saw him again, more than a year later, when, with a view to bringing the case before the Society, I sent for him.

The note I made on his condition (dated 9th inst.) is as follows:—

"Function of limb very good, but still disparity in muscular development of the two fore-arms, particularly as regards the flexor-pronator group. Slight recurrence of the contracture, especially of the mid-finger, but not such as to impair function substantially, or to be readily obvious. Sensation to light touch good, and all muscles acting. Such contracture as exists is mainly of flexor profundus."

I fancy it may yet be desirable to renew the splinting, to finally and completely restore the fingers and wrist to full freedom of extension, but I am quite confident the end result will be all that could be desired; the result even now must commend itself to most of you who see it now, as it certainly does to those of us who saw it at its worst.

It but remains to draw attention to the inequality in the two radial pulses in this case, a disparity, however, that is not now nearly so marked as it was at first.

To-day[7] I have repeated, more carefully, the observations made on 9th inst. respecting the nerve-muscular conditions in the affected fore-arm and hand. Shortly, it may be said that all muscles of the limb, both of fore-arm and hand, respond to the Faradic current, though, in the case of the flexores sublimis and profundus digitorum, and in the case of the pronator teres, the response is rather weak, and requires a strong current; curiously, the same is true in the case of the long and short extensors of the thumb, response only being got with a somewhat strong current. The response is weak also in the case of the lumbricales, and less than normal in the case of the abductor pollicis.

With the galvanic current, on the other hand, all the extensors, including also the supinator longus, show greatly increased excitability, even to weak currents, except the extensors of the thumb, which require a strong current. The flexor-pronators are normally responsive. In no case is there anything like polar reversal. Even the intrinsics of the hand, both median and ulnar, are unduly excitable, even to comparatively weak currents, and in all, *KCC.* is greatly in excess of *ACC.*

The following is a brief summary of the case:—

James McB., aged 11 years, admitted to Infirmary on 2nd March, 1918, suffering from fracture of both bones of left fore-arm, just received. Fracture caused by fall on back of hand, the wrist being flexed at the time. Both bones were broken slightly above the middle. Not examined by *x*-rays (evening). On same evening, *anæsthetic.* Arm and fore-arm put up on anterior (flexor) splint of moulded metal, bent at right angle at elbow—the fore-arm being fully supinated—supplemented by a corresponding moulded poroplastic splint, applied to the extensor aspect of the fore-arm only. The anterior (flexor) splint extended from close below the anterior axillary fold to beyond the fingers.

8th March, 1918.—Anæsthetic. On account of pain at elbow, &c., and disability in finger movements, splints removed, and put up again less firmly. There had been some excessive pressure by the anterior splint at the bend of the elbow, and an area of skin was obviously devitalised. (This devitalised skin had subsequently to be cut away, and the wound remaining was slow to heal.)

17th March.—No attempt at voluntary movement of fingers.

22nd March.—Anæsthetic. Examination under anæsthetic. Union of fracture not yet established. Already well-marked tendency to contracture of fingers. Limb put up almost fully extended, and partly supinated, on a straight splint; fingers fully extended also, but with much difficulty.

11th April.—Splint reapplied and wound dressed. Tendency to contracture marked. Passive movement of elbow, wrist, and fingers carried out.

14th May.—Patient dismissed to Outdoor Department for further treatment. To have massage and active movements of fingers, to counteract the contracture.

26th October.—Readmitted to ward by reason of well-marked ischæmic contracture (Volkmann). Atrophy of all muscles of fore-arm and hand. Fingers constantly flexed when wrist dorsal-flexed, but when wrist palmar-flexed, fingers extend slightly. Callus felt in situation of old fracture. Some loss of sensation, not easily delimitable. Radial pulse much smaller than on the uninjured side.

7th November.—Anæsthetic. Splints applied as described above.[1]

20th November.—Anæsthetic. Flexion of wrist reduced, and splints adapted accordingly. (See above.)[2]

4th December.—Anæsthetic. Further manipulation, &c. (See above.)[3]

24th December.—Anæsthetic. Further adaption of splints, with almost complete correction of contracture. (See above.)[4]

28th December.—Dismissed from hospital; made an out-patient.

9th January, 1919.—Anæsthetic. Original splints (fingers and wrist) discarded, and a long palmar splint substituted. (See above.)[5]

14th January.—Splints finally removed. Massage, &c., instituted.

22nd January.—Reported to-day (Out-door). Movements freer.

Lost sight of for over a year.

9th April, 1920.—Examined. See note marked [6] above.

14th April.—Again examined, the following notes being made:—

"Radial pulse less than on uninjured side, but not greatly so."

"*Motor function.*—Biceps, triceps, supinator longus, flexor carpi radialis, palmaris longus, radial extensors of carpus, long and short, acting strongly. Acting, but less strongly, flexor longus pollicis, flexor sublimis digitorum, and pronator teres. Flexor profundus digitorum also acting, but weaker still, especially in case of mid- and fore-fingers. Extensor communis digitorum acting fairly strongly, but checked somewhat when hand and fore-arm in line, or slightly dorsal-flexed. Long and short extensor muscles of thumb acting fairly strongly, but also checked as above."

"Wasting obvious and palpable, in case of both groups of fore-arm muscles, flexor-pronator as well as extensor."

"Wasting also to some slight extent present in thenar and hypothenar groups of muscles, but all muscles of these groups acting, including interossei and lumbricales."

"*Sensory function.*—Sensibility to light touch, to prick, and to temperature everywhere active."

16th April.—Electrical reactions obtained, in detail. (See note marked [7] above.)

THE BERGONIE CHAIR: AN APPARATUS FOR PRODUCING A PAINLESS, ALTERNATING, INTERRUPTED ELECTRICAL CURRENT.*

BY W. F. SOMERVILLE, M.A., B.Sc., M.D., F.R.F.P.S.G.

I PROPOSE first of all to describe in a few words the different parts of the Bergonie chair: then to show you a patient being treated: and thereafter to mention some of the therapeutic results obtained by this method.

By means of this apparatus of M. Bergonie, an alternating, interrupted, or Faradic current is produced, and this excites painless, passive, muscular contractions in the patient.

The power is supplied from the mains, the current in Glasgow being continuous. There is a small Ruhmkorff coil, more powerful than the ordinary medical coil, giving a current of 500 m.a. in the secondary circuit, and having a regulating rheostat.

The secondary current is employed with a break, producing about fifty interruptions per second. This break must be so adjusted that no sparking between the platinum points can occur. The break must act with perfect regularity, in order to obtain perfect regularity in the electric waves at the opening and closure of the secondary circuit, so that the resulting muscular contraction may be painless.

The metronome or rhythmic reverser through which the Faradic current passes, allows of alternating periods of muscular contraction and repose, and regulates the cadence of the muscular contractions. At every beat it reverses the current, thus causing rhythmic muscular stimulation. The metronome is regulated so as to give one double beat per second. The double beat is divided into four equal periods, two of repose and two of excitation, and in consequence of the alternation in the stimulating pole, the two excitations are of unequal intensity, though of equal duration. Thus, in one second of time, the patient will experience one-quarter second of repose, one-quarter second of strong contraction from the positive pole, one-quarter second of repose, and one-quarter second of a weak contraction from the negative pole. No tetany ever occurs.

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* Read at a meeting of the Royal Medico-Chirurgical Society of Glasgow, held on 6th February, 1920.

The current has to be turned on very slowly and gradually, to obviate the production of any unpleasant sensation.

The switch board is for twelve electrodes; back, seat, thigh, leg, abdomen and arm, for each side of the body. Each electrode has its own rheostat with a resistance of 200 ohms.

The polarity is indicated by its switch, which is turned upwards to render the electrode positive, and downwards to render it negative. The electrode can be put out of action by placing the switch horizontally. By careful adjustment the currents can be varied in their course and intensity through various portions of the body. The whole body may be treated, or any particular part, as may be desired. The electrodes are large, in order to excite as many muscles as possible. The fixed electrodes are formed by the seat and back, and consist of four copper plates, one for each buttock, and one for each side of the back, each being attached to its own distributor. The other electrodes are movable, and are applied to each thigh, leg, arm, and to one or both sides of the abdomen. A warm wet cloth is placed between the electrodes and the bare skin of the patient. Thus there are twelve electrodes, with a total area in the case of a stout patient of 10,000 square centimetres; and with a current of 50 m.a. we may obtain an intensity of about 0·1 m.a. per square centimetre.

Sandbags are employed to fix the electrodes and to maintain perfect contact. By their weight they increase the work done by the contracting muscles. These heavy sandbags cause no discomfort. Blankets are thrown over the patient, and a hot bottle is placed at the feet. The duration of the *séance* is graduated. At first twenty minutes will be found to be long enough. Afterwards it may be extended to forty-five or sixty minutes. The treatment should be given daily; indeed, it may be given twice daily, if rapid results are desired.

A few words may be added to emphasise the results of this form of treatment.

1. The muscular system is improved and developed, and patients are thus enabled to conduct their usual avocations with less fatigue. While the measuring tape shows that the girth of trunk and of limbs has diminished, owing to the absorption of fat, the body weight may even be increased, because of the increased development of the muscles.

2. There is improved nutrition of bone and of joints. The muscles under stimulation do not alter in length, and there is no movement of joints. The articulations are left at rest, and the joints are better nourished, without any disturbance of movement.

The same may be said of the reparation of injury to bony tissue. This is assisted by the improved circulation and the increase of heat caused by the Faradisation. The axis of the bone is compressed by means of the contraction of the muscles which surround it. Hence the value of this method of treatment in rheumatism, gout, and other joint affections.

3. The contractions and relaxations of the muscles under treatment augment the circulation within them. These contractions and relaxations can be timed to act synchronously with the heart's systole and diastole, though this is not really necessary. It is better to time the metronome to about ten beats per minute below that of the pulse-rate in cases of rapid pulse. The cardiac impulses will become stronger.

To quote Dr. Hanson—"The heart is assisted in its work of making the blood to circulate, by a temporary conversion of the large muscles of the body into subsidiary hearts. The work of the heart is thereby better done, while it is itself doing less work, and the circulation through the whole body is improved."

Intermittent pressure on the veins stimulates them to give rise to a more rapid flow of blood towards the heart, their valves helping by preventing a return flow. The blood passes more easily through the capillaries of the tissues, and thus reduces the pressure in the arteries, against which the heart has to pump. The breathlessness which is so frequently present in heart cases, is relieved. The lymphatics also receive pressure from the contracting muscles, and their contents are assisted in their return to the thoracic duct. Blood-pressure is reduced and the pulse-rate rendered less rapid. Œdema is relieved. The skin vitality is increased owing to the excitation of its glands, muscles, and vessels.

4. *General nutrition.*—The contracting muscle increases its combustion in proportion to its mechanical and physiological work, and the nutritive changes that occur are in proportion to the weight of the muscle exercised, and the duration in the time of the exercise. General nutrition is consequently accelerated. The contracting muscle demands more glucose from the blood, and the blood takes more from the liver, and the liver in turn draws from the organic reserve of glycogen. Hence better combustion is required. Further, in order to bring up the glucose necessary for the production of the required energy, the muscle demands more oxygen and gives up more carbonic acid gas. Thus there follows an increased amplitude and frequency of respiratory movements. By means of this increased combustion more heat is liberated into the substance of the tissues. The excretion of urine is increased in volume.

5. *Influence on the nervous system.*—Directly, there is none. The brain remains absolutely at rest. The patient is perfectly passive. The whole nervous system is in a condition of complete repose. Sleep is frequently improved.

6. *Effects on obesity.*—With the absorption of fat and the improved combustion, and with the hindrance to the accumulation of reserves, obesity is lessened. The output is in excess of the input. Diet, however, must be attended to and controlled. The Bergonie treatment helps in the reduction in the amount of food partaken, while the general strength of the patient is increased.

7. *Effects on constipation.*—Consequent on the contractions and relaxations of the abdominal muscles constipation is relieved, and the whole well-being of the individual is greatly improved.

8. In cases of paresis of a limb the apparatus is highly useful. By means of the various switches the interrupted current may be applied to any particular limb, to the exclusion of the other parts of the body, and, as before stated, if gently and carefully

applied, it is painless, and is a much more convenient and agreeable method of employing the Faradic current than by means of the ordinary medical battery.

Altogether, the apparatus has a wide range of usefulness as an agent capable of improving muscular power, and either generally or locally tissue metabolism, and this both directly and as a consequence of a more vigorous circulation of the blood and tissue fluids.

In clinical practice I have seen its benefits in numerous cases, and not the least of its virtues is that its application is pleasant rather than disagreeable to the patient.

CURRENT TOPICS.

Royal Faculty of Physicians and Surgeons, Glasgow.—At the monthly meeting of this Faculty on 6th September, Dr. John Brownlee, Director of Statistics, Medical Research Committee, London, was admitted as an Honorary Fellow. Dr. Brownlee had a very distinguished career as a student at Glasgow University, where he graduated M.A. (1889) with first class honours, M.B. (1894) and M.D. (1897), both with commendation, and D.Sc. in 1907. He also obtained the Diploma in Public Health at Cambridge in 1896. He served our city with conspicuous success as Superintendent of the Fever Hospitals, first at Belvidere and later at Ruchill. Thereafter he proceeded to London to take up the position he now holds under the Medical Research Committee. The high scientific importance of his work, and his numerous publications, have gained for him a position of pre-eminence in the scientific world.

At the same meeting, Basil William Henry Fergus, M.B., Ch.B. (Glasg. 1917), Tarkastead, Cape Colony, was admitted, after examination, as a Fellow of Faculty.

The Royal Medico-Chirurgical Society of Glasgow.—The first meeting of the ensuing session will be held on the evening of Friday, 15th October. The inaugural address will be delivered by the President, Dr. W. K. Hunter, his subject being "The Basal Ganglia: Their Functions and Diseases." The office-bearers for this session are as follows:—President, Dr. W. K. Hunter; Vice-Presidents, Mr. Arch. Young and Dr. R. Spiers Fullarton; General Secretary, Dr. Adam Patrick; Editorial Secretary, Dr. G. Herbert Clark; Treasurer, Dr. James H. Martin.

The Clinical Institute, St. Andrews.—Under the direction of Sir James Mackenzie the Institute has got so far under way that a course of post-graduate study for general practitioners is announced for this month, and will take the form of lecture demonstrations dealing with the symptomatology of disease in its early stages, and other matters of clinical interest.

The great work achieved by the director in the field of diseases of the heart, with which his name is closely associated in the minds of most, is apt to lead to a much too limited idea of the scope of the work which he has inaugurated at St. Andrews. The Institute is intended to embody in practice the views which he has frequently expressed in the journals regarding the lines along which he thinks progress in medicine is most likely to take place, and which he has amplified in the volume published last year under the title of *The Future of Medicine.* His immediate object is to lay the foundation of a scheme for investigating the beginnings of disease, not specially of the circulatory system but of any system, and to train general practitioners to make observations that to him appear most likely to yield results. It is essentially a research into the early symptomatology of disease when functional defect alone is present. The main symptom complained of is investigated with great thoroughness according to a definite scheme, and any associated symptoms are also recorded with the associated physical signs if these should be present. It is hoped that these records will be of considerable value when the patient's medical history is added to in later years.

Under the immediate supervision of Sir James Mackenzie, the work is being carried on by four practitioners of the city, each of whom has agreed to devote a definite period each day to the work of research in the special subject allotted to him. A whole-time bacteriologist and a chemist are also on the staff, and are provided with well-equipped laboratories, while an x-ray outfit has been installed. The aid of specialists is called upon as required. Each week the whole staff meets for discussion of cases or of methods.

Time will be required before the full object of the venture can be achieved, but, judging from conversation with the secretary, the members of the staff have quickly become endowed with the characteristic enthusiasm of their chief, and find interest and pleasure in part of their work which before seemed irksome, namely, in the evening consulting hour with Insurance patients.

THE ANDERSON COLLEGE OF MEDICINE, GLASGOW.—William Hislop Manson, M.A., M.D., Ch.B., F.R.F.P.S.G., has been appointed to the Chair of Ophthalmology, in succession to Dr. A. J. Ballantyne, whose appointment to the University Lectureship on that subject was announced in our last issue.

TERRITORIAL APPOINTMENTS.—We note that the following appointments as Medical Officers have recently been gazetted:—6th Battalion H.L.I.—Captain O. H. Mavor, R.A.M.C., and Lieutenant R. S. Brown; 7th Battalion H.L.I.—Captain A. P. Granger, R.A.M.C., and Lieutenant J. W. Macfarlane, R.A.M.C.; 9th Battalion H.L.I.—Captain E. S. Macphee; 8th Battalion Scottish Rifles—Captain W. H. Kiep, R.A.M.C.

TEMPORARY COMMISSIONS IN THE ROYAL ARMY MEDICAL CORPS.—The War Office is granting temporary commissions in the R.A.M.C. for a period of six months, for home service, to a limited number of medical men not over 55 years of age. Remuneration will be at the rate of £600 per annum for those who have not previously held commissions, and £650 for those who have served during the late war for a period of 12 months. In addition they will receive free rations or an allowance in lieu when rations are not issued in kind, and the regulated allowances and expenses when travelling on duty. An outfit allowance of £30 will be made to those to whom it has not been previously issued. Applications should be made at once in writing to the Secretary of the War Office (A.M.D.1), London, S.W.1, and should contain a statement of the candidate's age and previous service, if any.

PAY OF ARMY NURSES.—An Army Order just issued announces the new rates of pay and retired pay of the Q.A.I.M.N.S. and of the permanent nursing establishment of the military families' hospitals, with effect from 1st April, 1920. Briefly, the new annual rates of pay are as follows:—Matron, £115, rising by £10 yearly to £185: assistant matron, £85, rising by £5 a year to £95: sister, £75, rising by £5 to £85: and staff or charge nurse, £60, rising by £2, 10s. to £65. In addition, charge pay for matrons of Q.A.I.M.N.S. will be at rates not exceeding £45 a year, and for matrons of military families' hospitals £20 or £30 a year. Retired pay (with effect from 1st April, 1919), will will comprise a service element (£3 for each year of service) and a rank element; but a nurse retiring with less than 10 years' service will not be eligible for retired pay. The maximum rates of these two elements together are as follows:—Matron, £170; sister, £75; staff nurse or charge nurse, £55.

VOLUNTARY HOSPITALS.—It has been announced that the Executive Committee of the National Relief Fund, after consultation with the Minister of Health, have decided to appropriate the sum of £700,000 towards meeting the outstanding liabilities of the voluntary hospitals of the United Kingdom, incurred during the five years ending December, 1919, as a result of the war. The method of distributing the grant has not yet been settled, and a further announcement will shortly be made on this subject. The hospitals will be notified in due course when the Committee are in a position to commence the distribution, and in the meantime applications from individual hospitals are not desired. The Committee have decided to wind up this National Fund at an early date, and they hope shortly to issue a statement as to the disposal of the unallocated balance.

THE ST. ANDREW'S AMBULANCE ASSOCIATION: MOTOR AMBULANCE WAGGON SERVICE FOR SCOTLAND.—Since its inauguration in the year 1882, the St. Andrew's Ambulance Association, amongst its other activities, has devoted itself to the establishment of ambulance waggon services in Scotland.

Before the year 1882 there was not a properly constructed ambulance waggon in Scotland. Cases of serious illness or accident were conveyed to the infirmaries and hospitals in cabs and other unsuitable vehicles.

The Association began by providing two horse-drawn ambulance waggons for Glasgow, and within a few years it owned fifteen horse waggons; three were stationed in Glasgow and the other twelve in the more populous towns. The Association did everything in its power to encourage local communities to establish ambulance services, and before many years elapsed Scotland was well provided with horse-drawn waggons, over thirty of which were owned and run by the Association.

With all their usefulness the horse-drawn vehicles had the disadvantages of lack of speed and a limited radius, and in the year 1905 the Council of the St. Andrew's Ambulance Association decided to experiment in motor traction. The horse-drawn vehicles were gradually replaced by motor waggons, and by the year 1914 motor traction for ambulance work was used exclusively in Glasgow and the more populous centres.

Prior to the war motor traction for ambulance work had been adopted in most of the larger towns in Scotland, but it was not until after the armistice that the Association was enabled to establish a chain of motor ambulance services throughout Scotland. The relations between the Scottish Branch of the British Red Cross Society and the St. Andrew's Ambulance Association had always been of a close and cordial character. Indeed, it was due in no small measure to the Association that the Scottish Branch at the outset of its career was placed upon a solid foundation. It was therefore as fitting as it was generous that, when its fine fleet of motor ambulance waggons was no longer required for military purposes, the Scottish Branch, recognising the Association as the civilian ambulance body in Scotland, placed a large number of these waggons at the Association's disposal.

In all, 77 waggons were handed by the Scottish Branch to the Association. The hard service to which they had been put necessitated considerable repair and overhaul, for which the Scottish Branch made provision. The work of distributing these waggons was carried out by the Chairman of the Council, Colonel D. J. Mackintosh, C.B., M.V.O., ably assisted by Mr. Wellwood R. Ferguson, the General Secretary. When the waggons were received the Association, in addition to its headquarters in Glasgow, had 24 Centres or Local Committees in Scotland. These were quite inadequate for the purpose in view, and it was found necessary to form 47 additional Centres.

Scotland is now provided with a motor ambulance service extending from Wick in the north to Stranraer in the south, working in co-operation under the unified control of the St. Andrew's Ambulance Association. Separate provision has also been made for the Islands. The headquarters of the St. Andrew's Ambulance Association are in Glasgow, and there are 71 Local Centres or Branches.

Some figures may be of interest. In the first annual report of the Association it is recorded that 372 cases had been transported in Glasgow in the previous twelve months. For the year ended 31st May, 1920, the cases carried in Glasgow alone numbered 12,419, of which 5,960 were cases of accident and 6,459 of illness. In the year 1886-87 the Association's waggons in Scotland carried 846 cases. In the year 1919-20 the number was 23,891. Since the formation of the Association in 1882, 242,276 cases of accident and illness have been transported.

JOINT (DISABLEMENT) COMMITTEE FOR SOUTH-WEST OF SCOTLAND.—We have received from this Committee their report on the Shakespeare Hospital, which was conducted under their management from 8th September, 1918, till 1st December, 1919. During the war this Committee experienced very great difficulty in finding accommodation for discharged disabled soldiers and sailors who were in urgent need of indoor hospital treatment. Negotiations with civilian hospitals having failed, the Committee thereupon decided to start a hospital for the indoor treatment of pensioners. With the consent of the Ministry of Pensions, and financial aid from the Scottish Branch of the British Red Cross Society and the Soldiers' and Sailors' Help Society, a suitable building was found in Shakespeare Street School, which was generously handed over for the purpose by the School Board of Glasgow. Alterations were begun in July, 1918, and the first patients were admitted on 9th September, 1918. Beds were provided for 184 patients, viz., 93 medical and 91 surgical. In addition to the necessary administrative offices, the hospital was provided with an *x*-ray department and a well-equipped surgical theatre. Later, an Extern Department was considered necessary, and a suitable building was erected immediately adjoining, and opened on 17th June, 1919. Further, the Garscube Cottage

Hospital was placed at the disposal of the Committee by Sir Archibald and Lady Campbell of Succoth, for the reception of a limited number of convalescing cases. In all, 1,952 patients were admitted to the Shakespeare Hospital—1,164 surgical and 788 medical cases. It is of interest to note from the report that the ordinary revenue from capitation grant was almost, though not quite, sufficient to meet the ordinary expenditure. The capitation grant, at first 5s. per day and later 6s. 6d. per day, amounted in all to £22,362, 9s. 6d.; the ordinary expenditure totalled £22,600, 18s. 6d. The sum received on disposal of the hospital equipment, and the extern building will be allocated in accordance with the agreement between the donors of the capital funds and the Joint (Disablement) Committee.

An interesting feature of the report is an extensive note by the Director and Consulting Surgeon of the Hospital, Professor Robert Kennedy, M.A., M.D., D.Sc., on the number and nature of the surgical operations performed. A few of the more important operations are described in some detail, and are illustrated by several excellent photographs and skiagrams. There is no mention of the work on the medical side of the hospital.

VICTORIA INFIRMARY.—The teaching session will be opened by Sir James Mackenzie, who will deliver the inaugural address.

MEETINGS OF SOCIETIES.

THE ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

SESSION 1919-1920.

MEETING V.—5TH MARCH, 1920.

The President, MR. A. ERNEST MAYLARD, *in the Chair.*

AN ADDRESS ON SOME SURPRISES IN DIAGNOSIS.

BY EDMUND I. SPRIGGS, M.D., F.R.C.P.

[ABSTRACT.]

In the progress of the art of diagnosis it was evident that study of symptoms and signs was the initial step, then morbid anatomy widened the range of observations, exploratory operation and study of the pathology of the living extended the scope still more, and now various scientific methods belonging to the laboratory rather than to the consulting room were in common use. The progress of discovery of scientific methods had been faster than the growth of facilities for applying these methods to the needs of the general mass of sick folk. He worked at a private hospital which was, as regards its particular character and range, the first of its kind in Europe, in so far as the physicians were able to follow the investigation of their patients —whether chemical, radiological, bacteriological, or protozoological—under one roof, and to control the food, drink, rest, exercise, and general mode of life during the process, and after seven years' work his impression chiefly was of the constant interest which frequent surprises in diagnosis had given.

A short series of such surprises in diagnosis was narrated, showing how the working of a routine in which clinical and laboratory methods were used together, discovered certain conditions which necessitated alteration in the diagnosis. To determine how frequently such changes in diagnosis occurred, the last 500 cases were analysed and a comparison made between the preliminary diagnosis and that made after investigation. The patients were not average patients, but selected, many of them having been already submitted to examination by highly skilled physicians and surgeons. The comparison made was between the first diagnosis made after admission, with all the history and previous knowledge of the case afforded by the patient himself and by his medical advisers, and the second diagnosis made after such scientific investigation as seemed desirable had been carried out. The routine examination made was not the same routine for every patient. The examinations made were those which appeared to be directed to the symptoms complained of. The more general examinations were chemical and microscopic examination of the urine and fæces, including examination for bacteria and protozoa, of gastric contents, sputum, special examination of the nose, throat, and rectum, *x*-ray screening of the chest, photographing of the abdomen for opacities, and examination after a barium meal. In cases of deficient absorption, particularly suspected pancreatic disease, a valuable test is the analysis of the total excreta upon a fixed diet for a period of three days. It was not assumed that the second diagnosis was final and comprehensive. In most cases it was near to the truth, yet there was a proportion of errors and inaccuracies.

The series of 500 consecutive cases was divided into eight classes. In Class I were 53 cases of diabetes, which presented little or no difficulty. In Class II, comprising 143 cases, or 28·6 per cent, the first diagnosis was confirmed. In Class III, 96 cases, or 19·2 per cent, the second diagnosis confirmed the first, but some material and important point was added by the investigation, some of these additions being affections of the appendix, gall-stones, cancer of the sigmoid, gastric ulcer, and so on. In Class IV 83 cases were admitted with a diagnosis of one of two or more gastro-intestinal lesions—that is to say, the case was regarded as probable appendix or duodenum, or ulcer or gall-stones, without specifying which. Class V comprised 18 patients seeking relief after gastro-jejunostomy, for various reasons. In Class VI 96 cases, or 19·2 per cent, the second diagnosis differed materially from the first. In Class VII were only three cases, in which no diagnosis was made at all, and the examinations were negative. In Class VIII there were 8 cases in which the second diagnosis was wrong.

In summarising the 500 cases of varying nature, two-thirds being abdominal cases, the first diagnosis made on the history, symptoms and signs was confirmed by appropriate laboratory examinations and tests in 40 per cent, it was materially added to or modified in 34 per cent, and it was altered in 21 per cent.

Conclusions.—1. The first need in diagnosis was careful study of the history, symptoms, signs, and general condition of the individual patient. By such means accuracy was reached in 40 per cent of his cases.

2. In a large proportion of cases, especially those in which the functions of secretion, nutrition, and excretion were affected, or in which infections, calculi, or growths were present, the routine use of scientific methods of investigation was an invaluable aid. In over half of the cases the preliminary clinical diagnosis was modified or changed after routine investigations had been made.

3. Facilities for such examinations were at present widely needed, especially for people of moderate means as compared with those who were treated in public hospitals and with the well-to-do.

4. For want of such investigations large numbers of patients were given advice and treatment which was not best suited for their complaints, hundreds of unnecessary operations were done, and hundreds of operations which ought to be done were left undone.

MEETING VI.—19TH MARCH, 1920.

The President, MR. A. ERNEST MAYLARD, *in the Chair.*

I.—TWO CASES OF RUPTURED JEJUNUM—OPERATION—RECOVERY. RUPTURED DIAPHRAGM—TRANSPLEURAL SUTURE—RECOVERY.

BY DR. WM. RANKINE.

In the *Trans. Roy. Soc. Med.*, 1914, vol. vii, p. 96, reproduced in the second volume of Moynihan's *Abdominal Operations*, there is recorded a "table of 44 cases of rupture of the intestine without external wound, &c." An examination of the table shows that of the 44 cases recorded 23 occurred in the jejunum, and of these 17 died, whilst 6 were saved by operation.

Two cases of rupture of the jejunum which recovered after immediate operation have fallen to my lot, and I record them because of their comparative rarity, and to emphasise the point of view that if one suspects such a lesion from the manner of injury, from the patient's appearance, and the presence of abdominal pain and rigidity, the only safe line of procedure is immediate operation.

CASE 1.—H. K., æt. 19, was admitted to Mr. Nicoll's ward in the Western Infirmary on 5th June, 1914. A few hours previously he had fallen from a scaffold, and said he had landed on his abdomen. There was no external abrasion, but the abdomen was very rigid, and patient was collapsed and in great pain. Immediate operation. A tear in the jejunum was found about 12 inches from its commencement. It was transverse to bowel axis, and almost complete except at the mesenteric attachment. The tear was mended with a continuous Lembert suture, and an omental patch was stitched over the line of suture. There was little soiling of the peritoneum. This was cleansed, and flank and pelvic drainage was provided. The operation was stood well. Recovery was uneventful, and patient was dismissed from hospital on the twenty-second day.

I tried but was unable to get news of this patient lately.

Case 2.—J. T., æt. 19, was admitted to the Broadstone Jubilee Hospital, Port-Glasgow, on 15th January, 1919. He had fallen down the hold of a ship, and struck some beams whilst falling. There was a fracture of the crest of the ilium, and some blood was present in a catheter specimen of the urine. The pulse-rate rose steadily for a few hours after admission, and the abdomen was rigid.

Operation was performed about seven hours after injury. An incision was made through the right rectus muscle, and free blood was found in the peritoneum: about 4 or 5 oz. were mopped from the recto-vesical pouch. Whilst saline was being concurrently given into the pectoral region the intestine was examined. Two tears were found in the upper part of the jejunum within 6 inches of its origin—one incomplete, the other through all the coats of the wall, making a hole about the size of a threepenny piece. Mucous membrane pouted through the tear, and green-coloured mucus was pouring out. The wounds were stitched and infolded and the neighbourhood cleansed. No other lesion was found. The general condition improved during the course of the operation. The wound was closed without drainage. Delirium, high temperature, rapid pulse, and rapid respirations constituted the picture next day. Four days later the general condition was much improved. He was clear mentally, was taking his drinks, whilst the abdomen was quite lax, and the bowels had moved well.

Thereafter his condition caused no anxiety, and when seen four months after operation he was back at work and free from all discomfort.

Case 3.—The third case which I wish to bring to your notice may raise discussion on some points of extreme interest in the treatment of cases which now may come to the operating surgeon at any moment. I refer to cases of intestinal obstruction occurring in men who have had a gunshot wound of the abdomen or thorax, and, whether that be known or not, have had an injury of the diaphragm. Strangulated or obstructed diaphragmatic hernia can never be omitted from a list of the possibilities in any man who has been punctured through chest or abdomen by a bullet or by a piece of shrapnel, and who presents an "acute abdomen."

Is it good practice to tackle such cases across the pleural sac? In spite of the physiology teaching I imbibed as a student, I think so, and I have pleasure in reading you the notes of the case which led me to this conclusion, and also in demonstrating to you the patient—a "pre-war" case of a class claimed as constituting an "advance" made in war surgery.

S. M., æt. 8 years, was admitted to Mr. Nicoll's ward in the Western Infirmary on 14th September, 1914. The hind wheel of a motor bread van was said to have passed over his abdomen. On examination a bruise was seen over the left iliac crest, and another over the lower lumbar spines. The abdomen was very rigid, and the patient complained of great pain. Immediate exploration. The abdomen was opened above the umbilicus and a little blood was found in the peritoneal cavity, but no injury of liver, of large or of small intestines, of bladder or of kidneys was discovered. On passing a hand up to the left hypochondriac region to examine the spleen, it was found to be displaced along with the greater part of the stomach into the left pleural cavity through a large tear in the diaphragm. The abdominal wound was then closed and an osteoplastic flap, including portions of two ribs in the axillary and posterior portions of the left thorax, was turned up to give free access to the pleural cavity. The spleen and stomach were then seen prolapsed through a large rent in the diaphragm about 1 inch from its attachment. The spleen had some trivial surface lacerations. The lung was collapsed, and there was a moderate quantity of blood present. The spleen and stomach were replaced without difficulty, and the tear in the diaphragm was sutured with remarkable ease owing to its site and the free access obtained. The pleura was then cleansed and the osteoplastic flap replaced and sutured, closing the pleura completely except at the lowest point where a small gauze drain was left in.

20th September, 1914.—The note in the Journal reads—"Dressed. Patient has made a wonderful recovery so far. There is evidence of the lung expanding." No further note is recorded in the Journal, but the progress continued satisfactory, and the patient was dismissed twenty-five days after operation.

The present condition of the patient is satisfactory. He has grown much. The chest wall shows no deformity. The expansion on the left side of the chest is good. The R.M. is well heard over the whole left lung. An *x*-ray plate shows the dome of the diaphragm normal, and the patient has never had any abdominal discomfort whatever since operation.

II.—AN UNDESCRIBED CONDITION OF INFANCY AND ITS TREATMENT.

By Dr. G. Herbert Clark.

This communication appears as an original article at p. 193.

III.—A PLEA FOR THE EARLY RECOGNITION OF SYPHILIS.

By Dr. W. H. Brown.

Dr. Brown's paper will be found as an original article at p. 203.

A discussion followed the reading of Dr. Brown's paper, in the course of which—

Dr. J. Goodwin Tomkinson made the following observations: —First let me congratulate Dr. Brown on his admirable paper. While we are all agreed as to the importance of early diagnosis in syphilis, we must not forget those cases of cryptogenetic syphilis where the primary accident is undiscoverable. A writer so remote as Sir Jonathan Hutchinson laid stress upon this. In illustration, I may mention the case—particularly tragic—of a young R.A.M.C. officer, on the verge of matrimony, who saw me, during the late war, on his return from the Continent. He presented a statement that he had been dismissed from hospital after treatment for German measles and seborrhoeic dermatitis which, it was alleged, required further treatment. At another hospital the eruption had been diagnosed as due to insect bites, and it was added that they had had many such cases. He stated that he had visited, in all, five hospitals at home and abroad. I asked if he had put himself in the way of contracting syphilis. Unhesitatingly he said he hadn't. There were present a typical lenticular rash with corona veneris, bilateral reniform ulceration of the tonsils, and other concomitant signs of syphilis. I asked if he had done any war surgery. His reply was graphic and characteristic—"I have been wallowing in blood." Sir Jonathan Hutchinson has referred to the probability of a needle prick conveying the virus (spirochæta pallida) immediately to the blood-stream without any evidence of local infection. I could but conclude that this was an instance of that type of infection. Extra-genital chancres are occasionally seen in most unexpected situations. Once, with Professor Whitfield, of King's College Hospital, I saw a police constable with one on the back of the hand. Dr. Whitfield said that the constable, in an excess of professional zeal, had struck a prisoner—a syphilitic—on the mouth, and that the latter's carious tooth had abraded the constable's hand, thus giving entrance to the spirochæta pallida. Within recent years I saw in one of our large institutions a child of 7 or 8 years suffering from secondary syphilis. I obtained a history of an obscure sore of the foot which had been dressed antiseptically for some time. I suspected that the child had been running about with bare feet, and that recent syphilitic sputum had entered a breach of the skin. During the demonstration of lantern slides I have been wondering whose unprotected fingers held the syphilitic lesions for the photographer. Obviously it was anatomically impossible, in every case, for these to have been the patient's. I cannot too strongly urge that syphilis should invariably be approached with the most profound respect—*rubber gloves should always be worn.* In spite of insisting, in my skin clinic, upon the exercise of the greatest care in the handling of syphilitics, I had a visit, some years ago, from a former student of mine with a finger lesion and accompanying adenitis. It was a tragic interview. He had performed circumcision upon a syphilitic, and had not worn gloves.

REVIEWS.

A Manual of Practical Anatomy: A Guide to the Dissection of the Human Body. By THOMAS WALMSLEY, Professor of Anatomy in the Queen's University of Belfast. With a Preface by THOMAS H. BRYCE, M.A., M.D., Professor of Anatomy in the University of Glasgow. In Three Parts. Part I: The Upper and Lower Limbs. London: Longmans, Green & Co. 1920. (9s. net.)

EVERY teacher of anatomy knows the value, to his students, of a directory for dissection, and the appearance of the present *Manual* will therefore arouse considerable interest in the medical schools throughout the country.

It was while a lecturer in the department of Anatomy in the University of Glasgow, and at the suggestion of Professor Bryce, that Professor Walmsley undertook the preparation of this book. To quote from Professor Bryce's preface—"It is more important that the student, while at work in the dissecting room, should learn to recognise and mentally relate structures, than that he should memorise facts about them," and in accordance with this view the chief aim of a practical manual should be to form a directory of dissection. Short and concise descriptions, studied beside the subject, will guide the student's personal observations. Such descriptions have therefore been incorporated in the present volume, and have been printed in smaller type with a view to their not detracting attention from the general directions for dissecting.

The author, in his introduction, states that the aim of this book is "to direct the student in his work of dissection of the body, and in such a manner . . . as to induce him to compile for himself a knowledge of its structure by personal observations . . . it contains direct references only to those parts of the body which the student is expected to be able to dissect for himself."

Bearing in mind the aims of the work, we come to consider Part I, now before us. This part deals with the dissection of the limbs, and the directions for each limb commence with the order of dissection arranged as a time-table, showing the number of days to be allotted to each region. The directions are full, and are clearly expressed, and in each case are followed by brief descriptions which enhance the value of the directions, without eclipsing them. At the same time, these descriptions are not likely to be substituted by the student for a systematic text-book, but rather to facilitate his approach thereto. The importance of surface anatomy has been fully appreciated by the author, and his treatment of this part of the subject deserves notice.

The text is illustrated by 59 figures of simple line drawings, which will be greatly appreciated by the dissector.

Dr. Walmsley has laid students of practical anatomy under a deep debt. He has produced a manual which, while primarily intended for Glasgow students, merits a much wider field, and will deservedly be welcomed by both teachers and students in many medical schools.

Mind and its Disorders: A Text-Book for Students and Practitioners of Medicine. Third Edition. By W. H. B. STODDART, M.D., F.R.C.P. London: H. K. Lewis & Co. 1919. (18s. net.)

THE index to the third edition of this well-known *Text-Book* reflects at once the changed views of the author. Dr. Stoddart in his clinical differentiation now uses the broad general classification of the neuroses, the psychoneuroses, and the psychoses. In this he closely follows the doctrines of the psycho-analytic school, and this is more clearly demonstrated in the text, as instead of being content with giving a more or less symptomatological description of the different disease entities, he now makes an attempt to understand their psychogenesis. His attitude is well explained in his preface, in which he says—"Mental disorders can only be understood by studying the psychology of the unconscious mind of patients, and the physical manifestations of a functional nervous disorder must be regarded as secondary, not primary." Briefly, one may say that the result of this attitude has been, on the whole, to enhance greatly the value of his text-book; but there are certain points which one could take exception to, and which seem to show that the author has not been very critical in his judgment. For instance, when describing epilepsy, he points out that some epileptics are good-tempered, and may even assist the attendants in nursing the more troublesome patients. He then quite unnecessarily proceeds—"Even this feature is probably an infantile characteristic, for children like to identify themselves with their mother, and to help her in something she is doing. At least those readers who are familiar with psycho-analysis will discern the possibility that to the unconscious mind of the patient the attendant may symbolise the mother" (*sic*). Apart from such overdrawn statements, the book, as previously stated, is on the whole an excellent text-book for students; the symptomatology of the different disorders is well described, and the author can be congratulated on bringing this third edition so well up to date.

Vicious Circles in Disease. By JAMIESON B. HURRY, M.A., M.D. Third Edition. London: J. & A. Churchill. 1919. (15s. net.)

A VICIOUS circle is described as a "condition which keeps itself going by reproducing the conditions of its own stimulation." "The study of vicious circles," says the author, "exerts a fundamental influence on the outlook of pathology. It serves as a constant reminder that diseases, far from being entities as our ancestors supposed, are due to ever-acting morbid processes in which numerous organs and their functions are closely concerned." Every one is familiar with some form or other of the vicious circle, and sometimes the features of a disease present themselves to our mind in this form. Dr. Hurry has sought out a formidable number of vicious circles in connection with every system of the body, and the continuous reading of them fills one with a kind of despair. Is there no way of escape from this baleful round? In this third edition of his book the author has increased the space allotted to various methods of breaking the circle, and "instances are given to show how circles may be broken both by nature and by art." We believe the importance of this line of inquiry to be somewhat exaggerated. It is not so much the case that the subject has been neglected as that it is usually viewed from a different standpoint. But the author's graphic method of representing the facts is interesting, and may be the means of concentrating attention upon essentials.

Field Ambulance Organization and Administration. By Lieut.-Colonel JAS. HARVIE NEIL, N.Z.M.C. London: H. K. Lewis & Co., Limited. 1919. (4s. 6d. net.)

THIS book gives a non-official account of the organisation and work of a Field Ambulance. The matter is based on the official publications, chiefly the *R.A.M.C. Training.* It will prove a valuable adjunct to the training manual, and will deservedly meet with favour from all medical officers who require to be familiar with the arrangements of a Field Ambulance unit. It has been written by one having practical knowledge of the subject, and we have no hesitation in recommending it to the notice of R.A.M.C. officers.

Surgical Operations: A Text-book for Nurses. By E. W. HEY GROVES, M.D., F.R.C.S. London: Henry Frowde and Hodder & Stoughton. 1919. (21s. net.)

THIS volume has been written for the use of nurses, both during their training and after, and it contains a simple account of surgical operations and technique. In the case of each operation the author gives a short account of the reasons why the operation is performed, a list of the instruments required, and the steps of the operation. Then follows an enumeration of the special points in the after-treatment of each condition. The volume closes with a number of selected illustrations of instruments commonly in use. The names of these are printed in bold type; and as the instruments are arranged in alphabetical order, reference to the illustrations is greatly facilitated.

We think that all surgeons agree with the author as to the desirability of an intelligent understanding by the nurse of *why* everything is done. From a perusal of many of the nursing manuals on the market, there would seem to be great difficulty in accomplishing this aim with due restraint. We are glad to note, however, that Mr. Hey Groves has successfully overcome this difficulty, and we can unreservedly recommend the present volume to the favourable notice of all teachers in nursing schools. As one of the Oxford Medical Publications the general style of the volume is a foregone conclusion, and requires from us no word of praise; but we would like to thank author and publishers for placing in our hands such an admirable example of what a book on the present subject should be.

Essentials of Surgery: A Text-Book of Surgery for Student and Graduate Nurses and for those interested in the Care of the Sick. By A. L. McDonald, M.D. London: J. B. Lippincott Company. (8s. 6d. net.)

The appearance of a new nursing manual raises the question, "What should a nurse know?" Some of the works in circulation leave us with the feeling that the nurse is expected to know in very considerable detail the subjects of medicine, surgery, anatomy, &c. We believe that some knowledge of these subjects will help a nurse to perform her duties in a more intelligent manner. On the other hand, unless she be possessed of judgment she may be led to air such knowledge, with results the reverse of beneficial to her patient. The problem is a very difficult one, and we must hope and trust that the good will counterbalance the evil. The volume before us is an illustration of what we might call "over-information," and loosely given even at that. Take, for example, the following on p. 73:—"The blood-supply of the epiphyseal portion is independent from that of the diaphysis. Therefore certain types of infection are more frequently found in one portion and tend to remain independent of the other." We fail to see the bearing of this on the *nursing* of a case of osteomyelitis. Again (p. 77), under the heading "Tumours of bone," we find—"The exact nature of the tumour and its degree of malignancy may be determined to a certain extent by the rapidity of its growth, the x-ray picture, gross appearance on exploratory incision, or microscopic examination of the tissue." What have nurses to do with such questions? They have, in our opinion, no more concern with these than with "neurones" and "dendrites," or with the "Fissure of Sylvia" (*sic*), all of which crop up a little further on. We might multiply instances, but without profit to our readers. We regret our inability to agree with the author as to the usefulness of this *Manual* to nurses as such, even though they be seniors.

The Principles of Gynæcology: A Manual for Students and Practitioners. By W. Blair Bell, B.S., M.D.Lond. Third Edition. London: Baillière, Tindall & Cox. 1919. (38s. net.)

Blair Bell's *Principles of Gynæcology* has now reached its third edition. The author has made many alterations and has entirely rewritten a considerable portion of the book, and many new illustrations have been added. The arrangement and scope of the work have not been altered, and the size of the volume has not been materially increased, but the publishers have found it necessary considerably to increase the price. The book is not a compilation of the views of various authors, but bears the impress of the author's own views throughout, and in that largely lies its value. He has had a very large experience, and anything he states is well worthy of consideration. As is well known, he has done valuable work on the influence of the internal secretions on, and the association of the calcium metabolism with, the sexual characteristics and functions, and he has included the facts in connection with this subject in the appropriate places. The book is very fully illustrated with 390 ordinary and 6 coloured plates. The illustrations of the different operations are very well done, and the steps of the operations can be followed with ease. This edition is an improvement on the previous ones, and we have pleasure in strongly recommending it to students and practitioners.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

EDITED BY GEORGE MACINTYRE.

MEDICINE.

Lethargic Encephalitis: Aids to Diagnosis.—In the *Journal of the American Medical Association* (8th May, 1920), Dr. W. B. Cadwalader draws attention to the diagnostic importance of the occurrence of bilateral sympathetic ophthalmoplegia in cases of lethargic encephalitis, due to the involvement of a tract traversing the pons and medulla which contains oculo-pupillary fibres. A lesion of this tract causes contraction of the pupil and narrowing of the palpebral fissure and slight retraction of the eyeball of the same side. Dr. Cadwalader has recently had two cases of lethargic encephalitis with bilateral sympathetic ophthalmoplegia, in one of which the clinical diagnosis was confirmed by *post-mortem* examination. He claims that bilateral sympathetic ophthalmoplegia is not known to occur in other diseases.

In the *Journal of the American Medical Association* (15th May, 1920), Drs. Loewe and Strauss give the results of their investigations into the diagnosis of lethargic encephalitis, with special reference to naso-pharyngeal washings and to the cerebro-spinal fluid. Their conclusions are as follows:—

1. The Berkefeld filtrates of naso-pharyngeal washings from cases of epidemic encephalitis produce characteristic lesions when injected intracranially into rabbits. This finding has served as an aid to diagnosis in 78 per cent of cases so tested.
2. A minute filtrable organism identical with that previously described (L. B. Mendel and A. L. Daniels, *Journal of Biological Chemistry*, 1912-13), has been recovered in 11 of the 17 naso-pharyngeal washings cultivated.
3. Inoculation of rabbits with the cerebro-spinal fluid of patients with epidemic encephalitis confirmed the diagnosis in 12 of the 16 fluids injected.
4. Cultures of cerebro-spinal fluid have been positive in 10 out of 20 cases.

The control studies were uniformly negative.—DOUGLAS K. ADAMS.

SURGERY.

Treatment of Gastric Ulcer (*New York Medical Journal*, 6th March, 1920).—Parker, following the methods of Alvarez, reports 14 cases of gastric ulcer, treated by bilateral blocking of the fifth, sixth, seventh, eighth, and ninth intercostal nerves. Of these, one case was not followed up. Seven cases were free from symptoms over periods ranging from three months to two and a half years. Three suffer after over-eating; one had nephrectomy and remained well; one had colectomy and died; one relapsed. In every case, gastric analysis and x-ray examinations were made.—J. Scouler Buchanan.

Empyema (*New York Medical Journal*, 3rd April, 1920).—M'Glannon, of Baltimore, on the management of empyema, quotes several experiments to prove the value of treating empyemas by the "closed" method of operation. He states "the effects of an open pneumothorax on the respiration and circulation disappear almost at once if the opening is closed." The operation mainly consists of resecting a rib and introducing a double-flanged Brewer drainage-tube. This prevents any leakage. The tube is carried to a receiver and allowed to drain out under water, setting up a syphonage. He claims that patients recover much quicker, have less discomfort, and quicker return in expansion of the lung.

—J. Scouler Buchanan.

Industrial Inguinal Hernia (*New York Medical Journal*, 24th April, 1920).—Sellening on industrial inguinal hernia raises the matter from the compensation point of view. The article is well written, and quotes the findings of various Industrial Medical Commissions, *e.g.*, Californian Commission.

"The consensus of medical and surgical opinion runs to the effect that hernia is rarely, in any proper sense, the result of accidental injury; that the accident is at the best no more than the occasion instead of the cause of the malady; that the origin of the difficulty is congenital, and more in the nature of a disease than an injury; that every claim for compensation based upon an alleged rupture is to be viewed with suspicion."

Sultan states—"In the critical examination of a causal relation between hernia and accidents, we must remember, first of all, that a hernia complete in all its parts can never arise at the moment of the accident or by a single augmentation of the intra-abdominal tension, be it ever so great."

—J. Scouler Buchanan.

Secondary Nephrectomy (*New York Medical Journal*, 29th May, 1920).—Chute, of Boston, on secondary nephrectomy. The operation, in his series of cases, was necessitated either by a "blunder" in diagnosis at the previous operation or by the previous operation being that of pyelolithotomy. Among his "blunders" are cases diagnosed as renal calculi instead of caseated masses in the cortex of the kidney. Pyelolithotomy, he claims, should be superseded by nephrostomy, as it is always followed by persistent sinus, and does not give adequate means of drainage of the kidney substance.

—J. Scouler Buchanan.

DISEASES OF THE EYE.

Result of Uni- or Bilateral Ligature of the Common Carotid in Two Cases of Traumatic Exophthalmos. By F. de Lapersonne and Sendral (*Arch. d'Ophtal*, January, 1920).—These authors have reported two cases of traumatic exophthalmos, which have been successfully treated by ligature, in one case of one, and in the other of both common carotids (*carotide primitive*). They state that the attempts on the internal carotid are without effect, and that such operations are liable to cerebral and ocular accidents, immediate or later, and that these accidents are graver than those following the ligature of the common carotid.

The first patient was a captain, 37 years of age, who had received several wounds on the head on 1st December, 1917, and lay for twenty hours in coma in the hospital of Belfort. After being in different hospitals he was sent to Paris two months later with a diagnosis of fracture of the base. The exophthalmos began suddenly forty-five days after the wound.

On 15th February, 1918, there occurred a sudden detachment of the left retina with subluxation of the lens, and increased exophthalmos of the right eye. The left eye became completely blind from separation of the retina and secondary cataract.

The patient was kept under continuous observation, and by September, 1918, there was a non-pulsatile stationary exophthalmos, with slight chemosis.

In November, 1918, the sella turcica was found to be enlarged. By March, 1919, the patient began to complain of subjective troubles, a bruit being heard in different parts of the head, it being greater when he compressed his left ear, There was no sign of pulsation in the exophthalmos or of thrill in the left superior internal angle of the orbit.

By October, 1919, the exophthalmos had become much greater, and there was a greater chemosis of the conjunctiva around the cornea. The sclera was exposed for a range of 3 mm. beyond the lid margin, and it was not possible to close the lids. A systolic murmur could be perceived by auscultation in different parts of the head, which disappeared completely on pressure of the common carotid on the same side. The heart and vessels were normal.

On 30th October Martel, a surgeon, ligatured the common carotid of the left side, under ether anæsthesia. Before the ligature was tied, the artery was raised on a Deschamp's needle, and as there was no effect on the circulation or respiration, the ligature was tied.

The following day the patient was able to get up, and on the fifth day he left the hospital. The eye went back into place, and there has been no recurrence.

The second case was a soldier of 36 years, who was brought to hospital in June, 1917, suffering from fracture of the cranium, received in a train accident. He lay in coma for three hours. Forty-eight hours after this slight exophthalmos developed in the left eye, and on 23rd June it was noticed in the right eye, and this had become fully developed by 8th August.

The question arose as to which was the carotid involved; the appearance of exophthalmos in the left side, two days after the traumatism, and the hæmorrhage from the ear on that side incriminated the left carotid, although the symptoms were still more manifest on the right side.

On the sudden appearance of neuro-paralytic keratitis in both eyes and hypopyon in the right eye, with accentuated optic neuritis and intolerable bruits, a decision was made to ligature the right common carotid.

On 6th September Chutro, a surgeon, ligatured the right common carotid, without any noticeable effect. In a few weeks the thrill disappeared, and there was a dimunition of the murmurs, but the patient still complained of the bruit, which had not been influenced by the operation.

In face of this it was decided to ligature the left common carotid, but the operation was postponed for several weeks in order to prepare the patient; this was done by rendering the arteries supple, and by regular digital compression of the carotid, until the patient was able to stand this compression for a period of ten minutes at a time.

On 14th February, 1918, five months after the ligature of the right common carotid, and under an ether anæsthetic, Chutro ligatured the left common carotid, after testing the effect of compression of the artery on respiration and circulation.

On coming out of the anæsthesia the patient complained of a feeling of ice in his head, which lasted for three days. He noticed a diminution of the bruit. In April, 1918, he left the hospital very satisfied with his condition. In 1919 he wrote saying that his sight was very good, and that the bruit now troubled him very little, if at all.

The authors point out that in the first case the development was slow, and for a long time the diagnosis was doubtful; it was only after many months that the exophthalmos suddenly increased greatly. The result of the operation was perfect, and the patient had no cerebral trouble after it. An important fact is that the vision of the right eye (the vision of the left had been lost through the detachment of the retina) was retained, and the retinal and sub-conjunctival veins gradually diminished in volume.

The second case was much more striking, being one of double exophthalmos with aneurism, nerve paralysis, and many complications. Ligature of the right common carotid had no effect in diminishing the bruit from which this patient was suffering so much, and it was only after ligature of the left common carotid, done after a series of digital compressions, that the bruit was abated.

—W. B. Inglis Pollock.

DISEASES OF THE SKIN.

Vaccine-Therapy in Skin Diseases—Four leading dermatologists give their views on this subject in the *British Journal of Dermatology and Syphilis* (April-June, 1919). Adamson finds the vaccine treatment of pustular acne, chronic sycosis, furunculosis, and staphylococcal impetigo "distinctly disappointing," and is "unable to relate a single case of this sort which has been cured, or of which he could say that it has been definitely improved by the treatment." In the treatment of lupus vulgaris by tuberculin he has been "altogether unfortunate." Whitfield claims some successes, mainly in cases of a kind which are generally easy to cure, but which for some reason have proved resistant to ordinary treatment, *e.g.*, impetigo and boils. Failures are often due to lack of attention to the exciting cause, *e.g.*, rough coat collar in boils of the back of the neck. He has never cured a well-established sycosis with vaccine. Sequeira and Western have had some "striking successes" in cases of deep-seated furuncle and carbuncle, but have been "less fortunate" in staphylococcal folliculitis, and also in coccogenic sycosis. They have seen occasional temporary success in lupus from tuberculin. They have had no success in the tuberculides. Vaccine treatment of acne vulgaris is "frequently disappointing," and of acne rosacea useless. The "occasionally brilliant results" which follow the exhibition of phylacogens they consider non-specific (*i.e.*, so-called "protein shock" effects). Macleod and Topley state that "of all the conditions which they have treated with vaccines, the only ones in which they have been followed by definite and immediate benefit have been suppurating staphylococcal lesions, especially acute recent and recurring boils." Results with chronic infections have been "less certain and sometimes unsatisfactory." Results in acne, sycosis, and lupus are unsatisfactory. They conclude that the effect of vaccines can be studied and more definitely estimated in connection with skin diseases than with disease of any other organ, and that in their opinion the only affection in which they are of appreciable benefit is in the treatment of acute boils.

J. F. SMITH.

Books, Pamphlets, &c., Received.

Venereal Diseases: Their Clinical Aspect and Treatment, by J. E. R. McDonagh, F.R.C.S. With an atlas of 106 colour and 21 half-tone illustrations. London: William Heinemann (Medical Books), Limited. (£3, 3s. net.)

Atlas for Electro-Diagnosis and Therapeutics, by F. Miramond de Laroquette, M.D. Authorised translation by Mary Gregson Cheetham. With a Foreword by Robert Knox, M.D. London: Baillière, Tindall & Cox. 1920. (15s. net.)

The Year-Book of the Scientific and Learned Societies of Great Britain and Ireland: A Record of the Work done in Science, Literature and Art during the Session 1918-1919 by numerous Societies and Government Institutions. Compiled from Official Sources. Thirty-sixth annual issue. London: Charles Griffin & Co., Limited. 1920.

Selected Lectures and Essays, including Ligaments, their Nature and Morphology, by Sir John Bland-Sutton. Fourth edition. London: William Heinemann (Medical Books), Limited. (15s. net.)

A Treatise on Materia Medica and Therapeutics, including Pharmacy, Dispensing Pharmacology, and Administration of Drugs, by the late Rakhaldas Ghosh. Eighth edition, by B. H. Deare and Birendra Nath Ghosh, F.R.F.P.S.G. Calcutta: Hilton & Co. 1920. (9s. net.)

Sanitary Law in Question and Answer for the Use of Students of Public Health, by Charles Porter, M.D., B.Sc., M.R.C.P.Ed. Second edition. London: Longmans, Green & Co. 1920. (6s. 6d. net.)

GLASGOW.—METEOROLOGICAL AND VITAL STATISTICS FOR THE FOUR WEEKS ENDED 25th SEPTEMBER, 1920.

	Week ending			
	Sept. 4.	Sept. 11.	Sept. 18.	Sept. 25.
Mean temperature,	55·7°	54·6°	52·5°	49·6°
Amount of rainfall, ins.	0·86	1·09	0·98	0·10
Deaths (corrected),	206	239	270	278
Death-rates,	9·7	11·2	12·7	13·0
Zymotic death-rates,	0·5	0·8	0·7	1·0
Pulmonary death-rates,	1·8	2·3	2·9	2·5
Deaths—				
Under 1 year,	34	47	49	59
60 years and upwards,	65	77	85	74
Deaths from—				
Small-pox,	...	2	5	1
Measles,	...	...	...	1
Scarlet fever,	...	...	1	1
Diphtheria,	1	3	2	3
Whooping-cough,	4	3	...	3
Enteric fever,	...	...	1	2
Typhus,	...	...	...	...
Cerebro-spinal fever,	3	...	3	1
Diarrhœa (under 2 years of age),	6	11	10	12
Bronchitis, pneumonia, and pleurisy,	30	37	39	46
Cases reported—				
Small-pox,	10	17	11	6
Cerebro-spinal meningitis,	3	1	2	4
Diphtheria and membranous croup,	34	36	44	39
Erysipelas,	15	21	18	17
Scarlet fever,	78	71	71	76
Typhus fever,	...	...	...	...
Enteric fever,	12	5	6	8
Phthisis,	42	31	37	49
Puerperal fever,	5	7	5	6
Measles,*	31	26	26	35
Ophthalmia neonatorum,	20	15	16	15

* Measles not notifiable.

Sanitary Chambers,
Glasgow, 1st October, 1920.

THE

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ORIGINAL ARTICLES.

THE DEFECTS OF MEDICAL PRACTICE, EDUCATION, AND RESEARCH.*

By Sir JAMES MACKENZIE, F.R.S., M.D., LL.D.

In the years that will elapse before you enter upon the enterprise which you have in mind, might I suggest to you to review the present position of medicine, dispassionately yet fearlessly. I say fearlessly, for it requires some courage to call in question a matter which is accepted by all in authority, and which conforms to your own cherished beliefs. If you fail to do this, you may be but starting another school in which to propagate ideas which not only do not further medical knowledge but actually hamper its progress.

In order to assist you in this undertaking, I will put before you certain considerations in education and research which have been forced upon me in the course of a review similar to that which I suggest you should undertake.

There is a belief, widely held, that during the last quarter of a century medicine has made great progress, becoming more exact and scientific, and that its practice has been rendered more effective. Unfortunately, much of what is considered progress is but change and movement with no clear understanding of what constitutes science as applied to medicine. Because men are devoting themselves to the intensive study of portions of the subject, and medicine is breaking up into a great many specialities, it is taken for granted that progress is being made. Medicine is, indeed, becoming a subject so complex and even chaotic as to be beyond the comprehension of a single individual, but the fact that it is becoming so complex should rouse the suspicion that its pursuit may be on wrong lines.

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* Inaugural address delivered at the opening of the session in the Victoria Infirmary, Glasgow, on 19th October, 1920.

All sciences are governed by natural laws, and these are few in number. The discovery of these laws tends towards simplification and renders the sciences easy of comprehension, and serves to guide their pursuit towards a definite goal by methods systematic and orderly, and based on definite principles. The inability to recognise these laws obscures the issue and renders the pursuit haphazard and disorderly, and the result will be confusion. Let me direct your attention to instances of this confusion which one finds in the practice of medicine, in education and research. This can be seen when a new method is adopted or when a new discovery is made. As soon as this happens there invariably follows an exaggerated opinion of its importance and its significance. Being imperfectly understood, its application, though on the whole beneficial, may defeat its purpose and do actual harm.

Confusion in practice.—The discovery of auscultation and the use of the stethoscope in detecting the sounds of the heart affords an illustration. While much labour has been spent in detecting murmurs and finding out the mechanism of their production, the nature of the knowledge thus revealed, and how it should be applied, has not been understood. It was assumed that the information was of a kind that revealed the capacity of the heart for its work and gave indications of heart failure, present or prospective, and was therefore used not only in diagnosis, but for the purposes of prognosis and treatment. As a matter of fact, the information yielded by auscultation gives no indication of the efficiency of the heart, and only a limited information as to diagnosis and prognosis and no indication for treatment. The misunderstanding of the significance of the modified sounds of the heart for nigh one hundred years has misled the profession, not only in misinterpreting the significance of murmurs, but in directing attention from the methods which yielded information necessary for intelligent practice. The practice of medicine has thereby been rendered inefficient, and great numbers of patients have been in the past, and are to-day, wrongly treated, their minds burdened and depressed by unnecessary fears, and their careers in life unnecessarily interfered with. Indeed, the introduction of the stethoscope, so far, has done more harm than good, not only to individual patients, but to the progress of medicine. Before its introduction, the physicians were gradually acquiring a true knowledge of heart failure, but the introduction of auscultation led the whole medical world astray.

This disastrous result—for it is a disaster—is not due to the discovery, but to the fact that medical knowledge had not advanced so far as to enable the investigators to know what to do with the discovery.

If inquiry be made into the history of almost any discovery a similar lack of understanding will be found. Take, for instance, the introduction of the *x*-rays. Before the nature of the shadows which the *x*-rays revealed was understood, these shadows were made the reason for diagnosis and taken as indications for treatment. Shadows in the lungs, for instance, were taken as signs of consumption, and patients were treated for this disease. Moreover, we now recognise the disasters which not infrequently followed its use in treatment.

It may seem rash to touch upon the progress of surgery in this relation, and yet a sober review shows that though humanity has greatly benefited by Lister's discovery, yet harm also has resulted from the introduction of antiseptic surgery. The harm was done, not only to numbers of patients, but it had an injurious effect upon the progress of surgery itself, for it has rendered the surgeons careless as to the meaning of the signs and symptoms of disease. In place of leading to an increase of knowledge of this kind, the surgeon, under the belief that it was quite safe to open up the patient, has been led to neglect matters essential to intelligent practice, in that he fails to recognise the symptoms of disease and their significance. Those of us who have watched the development of surgery have had many experiences where the surgeon's inability to understand his limitations has been to the patient's disadvantage. The brilliant results that follow many operations have blinded the surgeon to the calamities that follow others. I have watched, for instance, the development of gastric surgery, and I have seen the greatest benefits follow a surgical operation; but I have also seen patients who gained no benefit from surgical interference—some were made worse and others died in consequence of the operation. If in place of taking only the successes of the surgeon the failures were closely studied, the reason for these failures would be found in that the surgeon had failed to recognise the possibilities of his calling.

When the full significance of symptomatology is understood, the part which the surgeon can play in its advancement and the fuller development of his branch of medicine will be realised. At present this great field for observation is neglected, and the invaluable opportunities of the surgeon are not used. A simple illustration will suffice. I have seen a patient with some obscure abdominal complaint consult a surgeon. The latter, pushing his finger into McBurney's point, causes the patient to wince with pain. Without hesitation the surgeon attributes the ill-health of the patient to appendicitis, and proceeds to operate and removes a perfectly innocent appendix. It never occurred to the surgeon to consider why he made a mistake in his diagnosis. Indeed, so far as I can make out, no surgeon has taken the trouble to understand the real nature of this symptom. I have searched modern surgical text-books in vain for a reasoned explanation, and I cannot even find a description of the tissues which are sore when pressed upon. This may seem a trivial matter, but if we understood fully the mechanism by which this simple phenomenon is produced, and the agents capable of producing it, light would be thrown upon one of those obscure fields of medicine where a lack of knowledge hampers progress.

In citing these instances I do not intend to reflect upon the physician or surgeon any more than a description of wound infection would reflect on the surgeon of one hundred years ago. The state of knowledge then did not admit of the recognition of the causes of wound infection, and the state of knowledge to-day does not admit of the recognition of such defects as I have pointed out.

Confusion in education.—When the improvements of the methods for examining the dead body raised pathology to a distinct branch of medicine, the misunderstanding of the kind of knowledge it revealed again led to its wrong application. The physician, seeing the damaged organs on the *post-mortem* table, very properly sought for the signs of the damaged organ in the patients, and so laid the basis of what is called "physical diagnosis." But he assumed that this gave the whole picture of disease, so that henceforth diseases were described from the standpoint of the *post-mortem* table, and to-day this is the aspect of disease now taught in schools and in the text-books. Justification for this attitude is found in the experiences in hospital wards where the clinical diagnosis is often supported by the *post-mortem* findings. I shall show later that the aspect of disease seen in the wards has a relation only to a small proportion of the diseases which are common among the people.

Following upon the introduction of improved pathological methods came the microbic theory of disease, and the brilliant results which speedily followed its introduction blinded the profession to its proper place in medicine. Before its limitations were recognised, even before the part it should play in medical research was understood, the whole course of medical education and research was altered. Investigation, which was slowly being perfected by the study of the patient's symptoms, was replaced by the methods of the laboratory. The physician, who had recognised that the best instruments for the investigation of disease were the trained senses of the observer, was replaced by men trained only to the use of mechanical methods. The methods which had brought to light the great wealth of knowledge in clinical medicine were suddenly dropped, and a new system adopted in its place. This change has now been in use long enough for us to appraise its value. If we turn, for instance, to the effect it has had on the practice of medicine in the field of the general practitioner, it is difficult to see any improvement during the last forty years. No doubt our knowledge of a few diseases is more exact, and some little benefit has followed from new methods of treatment, but these concern but a very small proportion of the sick in this country. Moreover, what has been gained in this way has been lost in other ways. The teachers of bygone days were, many of them, able men and acute observers, who as individuals had a wide experience of disease, for they were to all intents and purposes general practitioners. Being independent of mechanical devices and laboratory methods, they trained their senses, and taught their students how to use their unaided senses. In general practice even to-day the doctor finds little use for the many technical methods which he has been taught, but a very great use for the exercise of his own unaided senses. The neglect of this form of education renders him less qualified for undertaking the duties of general practice, so that what little improvement that has taken place is more than counterbalanced by what has been lost. The truth of this statement will be understood as I proceed.

Confusion in research.—But the conception of medicine which is dominant to-day actually hampers research. Those who are more directly engaged in the practice of medicine—the physician, the surgeon, the general practitioner—are more or less at cross purposes with the laboratory worker. Neither recognises the limitations of his own sphere, or the part his colleague should play. On the one hand, the physician and the surgeon are at a loss when to seek the aid of the bacteriologist, asking him when it is too late, or asking him to solve unsolvable problems. The bacteriologist, impatient at this obtuseness, takes upon himself the duties of the practitioner, with results too often little to his credit. The result has been to render research haphazard and practice ineffective, for one must honestly recognise that the hopes and expectations which justified these changes are far from having been realised.

The principles of research.—For the greater part of my life I have been engaged in the practice of medicine. During the most of that time I was also interested and engaged in research, and in applying its results in practice. This experience enables me to view research from an aspect different from that of those who are engaged specifically in research. I have studied the subject so as to understand the principles which should guide research and make the pursuit systematic and orderly. I have seen that these principles have been followed where research was successful, and I have noted that where failure has resulted these principles were neglected.

I have elsewhere pointed out that the principle guiding research is to recognise the onset of disease, and to know the circumstances that favour it. How can research have any success when the principle is ignored and research confined to laboratories where the sick are never seen, or to hospital wards long after the onset, when the body is damaged in so many parts that it is no longer possible to recognise the original complaint?

Before the discovery of the microbic origin of many diseases medicine had been slowly making progress, chiefly by means of careful clinical observation, aided by experimental and other laboratory methods. The great bulk of our present knowledge of disease and its symptoms was thus acquired.

Let us consider the steps by which those striking discoveries which so powerfully influence modern thought were achieved. If we take malaria and allied diseases of tropical countries we find that the clinical observer first recognised the diseases, studied their symptoms, separated each from others it resembled, observed the manner of their onset, and pointed out that they occurred only under certain climatic conditions and in certain places. The problem having thus been clearly defined, the clue has been given to the bacteriologist, who, by the application of his methods, achieved one of the most brilliant discoveries in the annals of medicine, and the practical application of his results has saved innumerable lives and has stamped out certain malignant diseases. I am inclined to think that the brilliancy of the bacteriologist's part in the discovery has blinded observers to the part he played. It has seemed reasonable to suppose that what had been done for diseases in tropical countries could be done for the diseases in this country, and that the way to achieve this was to hand research over to the laboratory worker. The part played by the clinical observer was not understood, and in the furtherance of research his services have been ignored.

The chief aim of medicine is the prevention of disease, and in some instances medical knowledge has enabled diseases to be successfully combated. When we consider these diseases we find them of a particular kind, such as small-pox, rabies, syphilis, malaria, puerperal fever, wound infection, typhoid fever. In all these the onset was of such a nature that its cause could be detected, and steps taken for its prevention. This knowledge was acquired mainly through the clinical observer, who recognised the symptoms of each particular disease, separated it from others it resembled, traced it to the circumstances that favoured or caused its onset. In most of these cases even to-day the agent actually causing the disease has not been discovered, and it will be seen that the discovery of the actual agent in wound infection and in malaria was preceded by careful clinical observation, while the basis of prophylactic treatment by vaccination was discovered in the same way.

From this consideration it will be realised that the first step in medical research is the recognition of the symptoms of disease, the arranging of symptoms into clearly defined groups, so that one disease may be separated from others which it may resemble. The first step in research is, therefore, *the differentiation* of diseases by means of the symptoms they produce.

The next step is the study of the circumstances which favour or induce the onset of diseases.

When these steps have been taken the clinical observer may have discovered the disease and its cause. As a rule, however, his methods fail to carry him so far: then he must recognise his limitations and turn to the laboratory worker. It follows that if investigation is to promise success the clinical observer must have studied the problem with all the means at his command, and he must place before the laboratory worker a clearly defined problem.

Where success has been achieved this method has been followed: its neglect has led to failure. It was assumed that the method which had been so successful in these particular diseases would likely meet with success if applied to the diseases common in this country, but, unfortunately, it was not clearly realised what these methods were. The part played by the clinical observer was overlooked. In the vast majority of people in this country suffering from disease the symptoms have not been clearly recognised, and in consequence no differentiation can take place: that is to say, the first step in research has not been taken. This is one reason why research has failed to benefit the people suffering from the more common ailments.

In order, therefore, to conduct research in a logical and systematic manner the first steps have to be taken by the clinical observer who recognises the symptoms of disease, differentiates one disease from others it may resemble, finds out the circumstances which surrounded its onset, and watches its course and termination. During this inquiry he will be confronted from time to time with difficulties which he cannot overcome, but he recognises their nature, clearly defines their character, and so gets a knowledge he can lay before his colleague—it may be the pathologist, the physiologist, or the bacteriologist. To them he presents his problem clearly defined, and they are then given a definite line for their part of the investigation.

If we turn from the contemplation of the successes to the failures we will see just as clearly that the reason for these failures was the neglect of these principles. Research has for its object the prevention and cure of the illnesses that affect the people in this country. The first question arises, "What are the clinical features of the diseases that produce ill-health amongst the people"? Except in a comparatively few cases this preliminary step has not been taken. The significance of this will be understood when dealing with the diagnosis of disease.

To pass from the general to the particular, let us glance at the manner in which consumption has been investigated. There is no need to dwell on the number of attempts that have been made to solve the problems of its cause and prevention, and the enormous amount of time, energy, and money that have been spent. Bacteriological research has added little beyond the fact that the tubercle bacillus is in some way concerned in its production—prevention and cure seem as far off as they were thirty years ago.

The failure to make further progress is simply because it is not known what steps to take, and neither the clinician nor the bacteriologist understand the part each has to play. In one sense the clinical observer has failed because he could not differentiate this disease at a sufficiently early stage to enable him to detect the circumstances that favour its onset. The bacteriologist failed because he had not recognised that his methods have but a limited application, and that the first matter in all medical investigation is the discovery of the symptoms of the disease—the reaction to the microbe—in the human subject.

The failure of the clinical observer is due to the fact that while his methods have been successful in the discovery of the symptoms and causes of particular kinds of disease, they are too crude for the detection of the more subtle symptoms. Moreover, the idea that laboratory methods were superior to the clinical has diverted attention from the methods suited to the study of symptoms, and this part of medicine so essential to practice and research has actually been checked in its progress. I will endeavour to show how matters essential to the study of symptoms are overlooked, and when you recognise this you will see that so long as investigators ignore the importance of this branch of knowledge to research, their endeavours are bound to end in failure.

The attitude of education and research to the common diseases.—Let us turn to the consideration of the diseases that are common amongst the people of this country. After all, these are the diseases which the doctors are supposed to combat, and it is but reasonable to expect that those who educate the doctors to treat these diseases, or the investigators who are expected to extend our knowledge of those diseases, should know what the diseases are, and what symptoms they produce.

Every general practitioner starts his career fairly confident that his teaching and hospital experience have furnished him with a competent knowledge for the pursuit of his profession. The intelligent practitioner is never long engaged in practice before he discovers that he is unable to recognise the ailments of a great majority of his patients. They present aspects most of which had never been presented to him in his hospital training. Most look upon this lack of knowledge as personal, never doubting but that experienced physicians had long ago solved the problems of disease which baffle them. It is only after years of close observation that they realise that the knowledge necessary to intelligent practice does not exist.

In going over the records of my own cases, which I had kept while engaged in general practice, I was struck by the frequency with which I had to confess that I could not tell the real nature of my patient's trouble. These results were so surprising that I wanted confirmation, and so suggested a census should be taken by my colleagues in St. Andrews. The inquiry was to find out what proportion of the diseases from which their patients suffered was capable of being accurately diagnosed. The result of a preliminary inquiry revealed that, after putting aside trivial complaints and minor injuries, in only a small number could a diagnosis be made with fair certainty, and in the vast majority it was impossible to state with any degree of accuracy the nature of the patient's complaint. We have been so impressed with the importance of this result that we are undertaking a more extensive and more systematic inquiry.

The small number of cases in whom the disease is diagnosable are, in the main, cases of advanced diseases like consumption, cancer, rheumatoid arthritis, diabetes, apoplexy, chronic Bright's disease, &c., and such acute diseases as pneumonia, scarlet fever, measles, diphtheria, &c.

Among the large numbers whose ailments it is impossible to diagnose, many are trivial and temporary: others again, though at first seemingly trivial and temporary, are, as a matter of fact, the beginning of these diseases which ultimately lead to permanent ill-health and death. I have looked up my notes of cases which I had watched for twenty to thirty years, and I find a large number of patients who developed incurable diseases, like those mentioned above, had consulted me from time to time for seemingly trivial complaints, but which I now recognise were the forerunners, or the predisposing illnesses of the more serious diseases.

To all intents and purposes the teaching of the student is limited to diseases *after* they have damaged the body and have produced manifest symptoms. The wards, where the student receives most of his clinical education, are filled with patients suffering from the later stages of disease. The only place the student can see the type of disease which will affect the great majority of his patients is in the out-patient department. This is always under the charge of the youngest and least experienced members of the staff. If it is borne in mind that the early stages of disease are the most difficult to detect, but the most hopeful for cure, commonsense would have said that here is the place for the most experienced physician and for the specialist with his laboratory. But there is another point which has been overlooked, viz., the earlier the disease is detected the easier it will be to perceive the circumstances that favour its occurrence.

If we bear in mind that the principles which have guided research to a successful result have required that the clinical observer should first clearly differentiate one disease from another, and should indicate the circumstances or conditions that favoured its onset, you will realise why research has failed in detecting or preventing the more common diseases.

As research requires the recognition of disease by clinical means, the methods that have been successful in the past should be employed, and steps taken to improve them. The clinical methods were somewhat crude, and it was difficult to see how they could be improved, and experienced physicians have gone so far as to say that the kind of knowledge capable of being revealed by the unaided senses was exhausted, and under this mistaken impression they have turned to the laboratory worker for help. But so far from the kind of knowledge being exhausted the real methods of their use have never been fully understood, and the fact that the crude methods revealed so much leads to the expectation that by refinement and improvement, along with the collaboration of the laboratory worker, a great addition will be made through them to medical knowledge.

Before leaving this subject, an illustration of the attitude of authorities towards diagnosis is to be seen in the book published by the Royal College of Physicians of London—*The Nomenclature of Diseases.* In this production, published as late as 1918, symptoms and diseases are mixed in hopeless confusion, and it is evident that in these influential quarters medical knowledge has not yet reached the stage when a symptom can be differentiated from the disease which produces it.

The multiplicity of symptoms.—Disease is only recognised by the symptoms it produces, and this is so well understood that symptoms have been studied from time immemorial, and is to-day recognised as of first importance. Yet, no sooner does one enter upon its more careful study than he finds the subject in a state of chaos. The absence of guiding principles has led to an accumulation of an enormous mass of detail, which, in place of aiding medicine, actually hampers it by clouding the issue and confusing its method.

When a man falls ill every organ of the body may be disturbed, so that a multitude of symptoms is produced. If we possessed the means there is no end to the number we might detect. But this simple matter is not recognised, and the search for symptoms has been blindly pursued, and the number being great, men are specialising in particular branches of medicine. To assist them the resources of other sciences are called into use, and we have the spectacle now of a sick man being subjected to a great number of specialists, each detecting the symptom peculiar to his speciailty, unaware that these phenomena may be the outcome of some simple process remote from the organs which are disturbed. Thus, I have seen a man fall into ill-health and consult one physician who was also a psycho-analyst and discovered the presence of a melancholia; another physician gave him a bismuth meal and, detecting nothing serious, diagnosed neurasthenia. He consulted one surgeon, who said he had appendicitis and removed his appendix: he consulted another surgeon who performed a gastro-enterostomy: then he developed a cough and consulted a lung specialist, under whose care he died of consumption.

The great number of symptoms which are detected by the unaided senses is being increased by the introduction of laboratory methods. When we express a doubt as to the wisdom of this procedure we are told that the discovery of a new fact means an addition to knowledge, and that an increase of knowledge is the aim of all investigation, and thus are these methods justified.

The result of this method of medical inquiry is to add to the already enormous number of symptoms an ever-increasing number of details, not one of which has been studied with that care which would reveal its significance to see whether it is essential or not essential: and as a consequence we have to-day the whole of medicine clouded over with such a vast accumulation of these details that the chief aim of medicine is lost sight of, and the true method of education and research unrecognised.

There is to-day a mistaken idea that laboratory methods for detecting symptoms are more "scientific" than the clinical methods, where the senses of the trained observer are the means. So persistent is the notion that the head of a famous school of medicine wrote me a few months ago that they were now training the students in all the laboratory methods of diagnosis. Of course the idea underlying this procedure is that the purely clinical methods are exhausted. There never was a greater mistake, and this is the procedure that is surely hampering the progress of medicine and rendering its practice ineffective.

Let us look for a moment at the difference between the kind of knowledge obtained by the two methods. As I have said, when a man falls ill every organ may be disturbed, so that we can get plenty of symptoms revealed by both methods. In practice, only a few symptoms are recognised or need to be recognised. Are they to be discovered by laboratory methods or by clinical? The laboratory method requires some mechanical means and a technique more or less elaborate, often not capable of being used at the bedside. The trained senses are ever present with the doctor.

A valuable set of symptoms revealed by the trained senses cannot be detected by mechanical methods. The symptoms at the onset of an illness are mainly subjective—exhaustion, pain, loss of appetite—and such signs can never be detected by any laboratory process. Moreover, a matter essential in every case, such as the value of a symptom in relation to the possibility of danger, can never be obtained by laboratory methods.

Where laboratory methods are of use is in helping to interpret the mechanism by which symptoms detected by the unaided senses are produced. Here there is an ample field which teachers should cultivate, in place of burdening the student with a lot of methods which he will rarely employ. A systematic investigation of symptoms guided by definite principles has never taken place, and so long as it remains undone the science of medicine will be hampered in its progress.

I shall not dwell upon the methods by which symptoms should be investigated, as I want to draw your attention to a part of the subject of the very first importance in the intelligent practice of medicine—that is, the assessing the value of symptoms.

Prognosis.—When a person falls ill, the natural question which he wants answered is, What is to be the outcome of my complaint? He wants to know if his illness is temporary or is to result in permanent ill-health or in death. This kind of knowledge is included in the term prognosis, and at one time it received a great deal of attention, and in my student days we were taught its importance, and endeavours were made to understand it. Commonsense tells us that this is a matter essential to the intelligent practice of medicine, but to-day it is thrust into the background, and the teacher of to-day neither understands its importance nor the methods by which this kind of knowledge should be acquired. In order that you may realise what true medical research means, and understand some of the methods which are peculiar to medical science, I will describe to you how the matter was forced on my attention, and the steps I took to acquire some knowledge of prognosis.

Early in my career in general practice I was called upon to treat people and to give an opinion as to their fitness for life insurance and for working at their trades. Some of them presented abnormal signs in the heart, such as murmurs and irregularities. I thought the matter was a simple one—an abnormal sign not only being a reason for treatment and for rejecting a man for life insurance, but also for preventing him following his work if it were at all strenuous. As years went on I found that the people that I had deemed unfit led strenuous lives with no bad result. I then recognised that my prognostications were not based on real knowledge but on surmise, and I sought for enlightenment and searched my text-books. But to my astonishment I could get no help. While text-books would describe a murmur with meticulous nicety, no attempt was made to assess its value. I then realised that this kind of knowledge did not exist. I was fortified in this by an expression of opinion by that great Glasgow physician, Sir William Gairdner, who in a discussion on prognosis declared that when he considered the reason why he rejected men with some heart abnormality for life insurance, or penalised them, or shut his eyes to the abnormal sign, he recognised that his opinion was not based on real knowledge but was a matter of guesswork.

Realising that there was an urgent need for this kind of knowledge, I reflected that my opportunities afforded the means for finding out the significance of such a common sign as a heart murmur. I therefore started an inquiry, but I had not gone far when I found I made no progress, and I realised that I did not know how to set about it. I could get no help from books or from articles on prognosis, and I discovered then that medical knowledge had not advanced far enough to recognise the method. When I had almost given the quest up as beyond me, I put to myself the simple question, "What are you afraid of?" After a little consideration, the reply became evident—I was afraid of heart failure. Then followed the question, "What are the signs of heart failure?" I had to confess that, except in certain forms of heart failure where dropsy and dyspnœa occurred, I had no idea of the signs of heart failure. Again I turned to my text-books—clinical, physiological, and pathological—for a description of the signs of heart failure, and again discovered that the knowledge did not exist. I therefore recognised that I was incompetent to study the prognostic significance of heart affections until I knew the signs of heart failure. To acquire this knowledge has taken many years, and it is yet far from completed; but I gained sufficient knowledge which enabled me to give a sure prognosis in the great majority of cases. Let me impress upon you how this knowledge was acquired. I had first to study many cases to find out the signs of heart failure. I found among other things that the first signs of heart failure were not to be detected in the heart itself, but in the impaired function of organs remote from the heart, the impaired functions being due to an insufficient blood-supply. Then I had to see people before the heart was affected, I had to watch the circumstances that weakened the heart, I had to see the effects of hard work, of pregnancy, of intercurrent diseases, and I had to detect the onset of the earliest sign and watch the progress till it terminated in death. I had to find out the mechanism by which the various symptoms were produced, and to do this I had frequently to resort to the physiologist for help. By the knowledge thus acquired I was able to distinguish those signs which were of significance from those which were of no significance. You will see that to understand the subject of prognosis the observer has to undertake a long training, and then he has to have the opportunity of studying not only acute cases, but cases that proceed gradually for ten or twenty years or longer.

It is impossible for those who have not undertaken this kind of research to understand its difficulties. Let me describe one phase of the subject. One object I had in mind was to understand where lay the danger of pregnancy in a woman with a damaged heart. This is a problem which confronts time and again every general practitioner, and it is one of very serious moment to those concerned. The references to this subject in the most recent books on obstetrics have not advanced beyond those published forty years ago. To undertake this part of the inquiry I had, as I have said, first to train myself to detect the early signs of heart failure. Then I had to study the changes in the circulation during pregnancy, during confinement, and during the puerperium which occurred in healthy women; I had to watch the changes that took place in women with different forms of heart disease, examining them before pregnancy and at all the subsequent stages. This meant attending them during labour, taking careful observations during the pains and when free from the pains. These observations were not made in a comfortable ward with plenty of help, but often after a hard day's work, during the night in poor cottages, where I had to do the duties of the doctor and nurse, give chloroform, apply the forceps, and wash the baby. Yet this work had to be done, and in no other way could the knowledge be acquired.

You will see that a matter like prognosis, so essential to medical practice, requires methods and opportunities of a particular kind. Yet so backward is the state of medicine that neither the methods for acquiring this knowledge nor the value of the knowledge when acquired is understood.

Training of the teacher.—This becomes evident if you consider the methods by which the teachers of practical medicine are trained. Although their principal duties will be to teach students who are to become general practitioners, they are debarred from obtaining any experience of the life of the general practitioner. They are encouraged to spend their earlier years in some laboratory under the mistaken idea that they are being trained in a more scientific way. From there they pass to the hospital wards. They may spend some years in the out-patient department, but their training has all been devoted to the search for the signs of advanced disease: so they pass through their experiences unable to detect those signs which are peculiar to the early stages of disease. The ambition of all physicians and surgeons is to get into the wards, and once there all hope of their acquiring a knowledge of the diseases which will form the bulk of their students' practice when they enter general practice is gone. We have now the extraordinary spectacle of students being taught by a great number of teachers, not one of whom has any experience of the problems which will confront them in general practice. Probably in no other trade or profession does a similar state of affairs exist. I have just shown how prognosis is essential to intelligent practice, and have indicated the methods by which this knowledge can be acquired. You will see for yourself how hopeless it is to expect a man whose experience is limited to the laboratory, the hospital, or the consulting room ever to acquire this kind of knowledge. This is one of the instances where medical education has actually gone back.

How blind the authorities are to this branch of medicine is seen in different spheres of practice. As soon as a man receives his qualifications to practise he is supposed to be fit to undertake examinations for life insurance, or if he goes into the army he is supposed to be qualified to say whether a man is fit for service. The experiences during the war threw a flood of light on dark places of medical knowledge, but no more startling revelations of the backward state was revealed than in the absence of prognosis. At the outset of war large numbers of perfectly healthy people were rejected, because the doctors detected some sign whose value they were unable to assess. Later, when conscription brought all and sundry into the army, the authorities set up a scale of classification, all very well on paper, but absolutely futile in practice, as it was based on the assumption that all doctors could tell how much work could be undertaken by a man in impaired health. It is needless to dwell upon the hopeless breakdown of the system, a breakdown entirely due to the fact that the military and other authorities did not know that the knowledge necessary to classify the men according to their scale nowhere existed.

The research into the prognostic significance of murmurs showed that a great many subjects required elucidation. In the search for symptoms of heart failure I came across a number of obvious signs that had received little or no attention. I found that cardiac irregularities and pulsation in the veins of the neck were of frequent occurrence, but no reliable information could be had about this. So a long search had to be made to find out their cause and significance. As a practitioner I had to treat my patients, and so I watched the effects of remedies. I found that therapeutics were in a welter of confusion, and sought for principles that would help in the intelligent study of remedies. This required an enquiry into the production of symptoms, and in the end it demonstrated that little progress in therapeutics can be made until a more thorough knowledge of symptoms is acquired. From these experiences I sought for the principles which should guide an investigation into symptoms, and some of these have been revealed, and we are now in St. Andrews putting them into practice, already with some measure of success.

To sum up—we see that for research to investigate disease in an orderly and systematic manner it is necessary that the first step should be taken by the clinical observer, who should detect the signs and symptoms of disease, differentiate one group of symptoms from others it may resemble. The clinical observer then can recognise the kind of help he requires for the further elucidation of his problem, and can present to the laboratory investigator his problem precise and clearly defined.

To obtain his information the clinical observer must not limit his researches to the study of the disease when it has damaged the body or caused death, but must recognise the symptoms at a period which will bring him close to the time of the onset of the disease in order that he may recognise the circumstances that favoured or caused the disease.

These enquiries must not be conducted in a haphazard manner, but in an orderly way, guided by principles which are based on the laws governing the production of symptoms.

Such research must include those who have the opportunities for seeing the patients under the appropriate conditions. It is manifestly of no use for those whose opportunities are limited to the laboratory or the hospital to attempt to discover the essential points of the clinical problem. This portion of the work can only be done by the general practitioner.

Let me give one word of warning. I have for a long time been calling attention to the fact that the opportunities of the general practitioner were absolutely essential for the prosecution of research. Such views have hitherto been neglected or treated with contumely, and to-day you can see for yourselves that he is encouraged to take no part in research or education.

There is, however, arising a dim idea that his help is wanted, and there is a danger that, like the instances I have dwelt upon, a new method will be introduced before its purpose is understood.

The Consultative Council to the Ministry of Health has recently advocated the adoption of Health Centres to be managed by general practitioners, with some vague idea that the early stages of disease will be recognised. If you have grasped the significance of the description I gave of my endeavours in this direction, you will realise that it took me many years to train myself how to observe. It is therefore preparing for failure to start these Health Centres without a previous training of the general practitioner; the education he has received is scant enough to enable him to act as a general practitioner, but is totally inadequate to make him of any use as an investigator.

If education would deal more with principles and less with details, the general practitioner would be able to apply these principles in his practice. When the laws governing the production of symptoms are recognised, the discovery of one symptom will guide him to the search for others, so that the groups of symptoms which are peculiar to different diseases can be distinguished. The spirit of the investigator will be aroused, and the life of the general practitioner—often so dull and monotonous—will be transformed, for each patient will become the object of a lively interest.

THE BASAL GANGLIA: THEIR FUNCTIONS AND DISEASES.*

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LADIES AND GENTLEMEN,—My first duty on taking this chair to-night is to thank the members of the Society most sincerely for the honour they have done me in electing me their President. It is a distinction I appreciate very greatly, not only on account of the prestige, and the expression of your goodwill which it conveys, but also because it gives me a place once more on the executive of a Society I had the honour to serve for eight years as General Secretary, and in the well-being of which I am still greatly interested.

My second duty, I understand, is to give a Presidential Address, and this, as you will see from the billet calling this meeting, forms the public business before us to-night. I have chosen for this address the "Basal Ganglia," not because I can claim any special or first-hand knowledge of the subject, but because a number of interesting papers bearing on these structures have appeared in the literature of the past few years, and it seemed to me that a review of the functions and diseases of the basal ganglia, as we at present understand them, might form a suitable introduction to our winter's work.

The basal ganglia, or, more accurately, the optic thalamus and corpus striatum, consist of considerable masses of grey matter situated at the base of each cerebral hemisphere, and they are traversed by the fibres of the internal capsule. The optic thalamus is irregularly egg-shaped, with its narrower end directed forwards and inwards, and its posterior end (pulvinar) lying just external to the pineal gland. It measures about an inch and a half from before backwards, and about three-quarters of an inch in both its transverse and vertical diameters.

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* Presidential Address to the Royal Medico-Chirurgical Society on 15th October, 1920.

Its upper surface constitutes part of the floor of the lateral ventricle, whilst its inner surface forms the outer wall of the third ventricle, being connected with the inner surface of the opposite thalamus by the *massa intermedia.* Inferiorly, the thalamus is in connection with the tuber cinereum in front and the tegmental portion of the crus (hypothalamus) behind, whilst its outer surface is bounded by the posterior limb of the internal capsule.

The corpus striatum is situated in front and on the outer side of the optic thalamus, and consists of two masses of grey matter —(*a*) the caudate nucleus and (*b*) the lenticular nucleus. The former is pear-shaped, with its larger end forwards, and its narrow extremity lying lateral to the thalamus, and extending backwards as far as the pulvinar. The anterior part of the caudate nucleus forms the floor and lateral wall of the anterior horn of the lateral ventricle, the narrower end running along the side of the ventricle and passing into the roof of its inferior horn.

The lenticular nucleus is irregularly triangular in shape, both in its vertical and horizontal sections. It lies external to the caudate nucleus and optic thalamus, being separated from the former by the anterior limb and from the latter by the posterior limb of the internal capsule. The lenticular nucleus is divided into three zones by two white lines, the medullary laminæ, which run anteroposteriorly and parallel to the external capsule. The outer zone, the putamen, forms the base of the triangle, and the two inner zones (globus pallidus) its apex. Anteriorly and inferiorly the putamen is continuous with the anterior end of the caudate nucleus and further back with the nucleus amygdalæ.

Microscopically, these basal ganglia are seen to be made up chiefly of grey matter, containing ganglion cells of different sizes. In the thalamus the cells tend to arrange themselves into rather ill-defined groups which have been called the nuclei of the thalamus. Nissl describes nineteen different nuclei; but as each anatomist seems to have a classification of his own, differing from all others in at least terminology, such elaboration rather tends to confusion. And so, for the sake of simplicity as well as brevity, we may say that the thalamus is divided into three masses of grey matter, namely, (*a*) the anterior nucleus, (*b*) the mesial nucleus, and (*c*) the lateral nucleus. The anterior nucleus is situated at the most anterior portion of the thalamus. The mesial and lateral nuclei lie behind the anterior nucleus, and are separated from each other by the vertical white (internal medullary) lamina. The mesial nucleus contains the "nucleus medius," and the lateral nucleus the "nucleus lateralis," with its "dorsal," "middle," and "ventral" divisions. Placed between these more mesial and lateral nuclei we have "nucleus ventralis," "centre median nucleus," and "nucleus arcuatus," and posterior to these the cells of the pulvinar.

All the sensory fibres of the fillet, as well as fibres of the superior cerebellar peduncle, terminate in the nucleus lateralis (said to be its ventral and middle thirds), the fibres of the fillet being placed below those of the peduncle. From this lateral nucleus two fresh series of neurones originate. The first, consisting of quite short axones, pass inwards and end around the ganglion cells of the mesial nuclei. The second series pass into the internal capsule and end around the ganglion cells of the cerebral cortex. Thus, from the anterior part of the lateral nucleus, fibres pass through the anterior limb of the internal capsule to end in the frontal lobe. Some of these fibres, however, do not reach the cortex, but terminate in the caudate and lenticular nuclei. From the lateral portion of the lateral nucleus fibres pass by the posterior limb of the capsule to the anterior and posterior central convolutions, the fibres to the leg area coming from the dorsal cells, those to the face area from the ventral cells, whilst fibres from the cells of the middle portion of the nucleus go to both these areas as well as to the arm area. The posterior part of the thalamus (the pulvinar) receives fibres from the optic tract, and sends a fresh series of neurones backwards in the optic radiation to the occipital lobe.

To the outer part of the pulvinar lie the internal and external geniculate bodies, which should be regarded as outgrowths of the thalamus. The external geniculate body, like the pulvinar, receives a proportion of the fibres of the optic tract, whilst the internal body is an end station for auditory fibres. From this internal geniculate body the auditory radiation passes through the posterior limb of the internal capsule and under the lenticular nucleus, to end in the temporal lobe.

But whilst the thalamus is connected with the cortex by ascending fibres, there seems no doubt that there are also descending pathways, originating in the cortex and ending in the thalamus. Thus, the pre-central and post-central gyri are connected by projection fibres with the middle and ventral thirds of the lateral nucleus, and this same nucleus also receives fibres from the temporal convolutions. In a similar manner the occipital lobe is connected with the pulvinar. In this way, as we shall see later on, the cortex may exercise a controlling influence over the functions of the thalamus.

Besides these connections with the cortex just mentioned, there is reason to think that the thalamus has also a descending pathway, the thalamico-spinal tract, which, according to Sachs, originates in the nucleus ventralis and passes down in the posterior longitudinal bundle, through the inferior olive, as far as the lower cervical region of the cord. In man this tract consists of but few fibres, but in the lower vertebrates it is comparatively large, and apparently in them is an important efferent pathway. It is to be noted, too, that in the human fœtus it is one of the earliest tracts to get its myelin, showing that, phylogenetically, it is a tract of some antiquity.

The other and more mesial nuclei of the thalamus seem to be association centres connecting various nuclei to each other, and they do not send their processes outside the thalamus. The anterior nucleus, however, sends fibres to the caudate nucleus, and is said to be an intermediate station between that nucleus and the corpus mammillare.

The ganglion cells of the corpus striatum are not so definitely arranged into groups as in the optic thalamus. Two types of ganglion cells, however, can be recognised, namely, (*a*) the larger cells with long axis cylinders, which form an efferent system uniting the corpus striatum with the thalamus and with the nuclei of the subthalamic region : and (*b*) the small cells with short narrow processes which remain entirely intranuclear. The larger cells are met with chiefly in the globus pallidus, though they are also found in small numbers scattered through the putamen and caudate nucleus. It is the same type of cell, but of smaller size, as the Betz cell of the motor cortex and the ganglion cells in the anterior horns of the cord. Its processes, however, are thinner than those of the pyramidal pathway or of the anterior nerve roots. Malone says that this particular type of cell met with in the globus pallidus is not represented in the optic thalamus, and, indeed, that the thalamus contains no ganglion cell of the motor type.

The smaller cell above mentioned is the prevailing cell in the putamen and caudate nucleus, and by its processes it seems to connect the caudate and putamen with each other, and with the lateral and mesial zones of the globus pallidus. Histologically, the putamen and caudate nucleus are very similar in structure, and are closely connected by these internuncial fibres: but it is to be noted that fewer fibres pass from putamen to caudate than from caudate to putamen. The pathways in the corpus striatum seem, therefore, to direct themselves towards the globus pallidus, from the mesial parts of which fibres run across the internal capsule in the ansa radiation to end in the lateral nuclei of the optic thalamus. It is doubtful if fibres go direct from caudate to thalamus, but, as we have seen, fibres pass directly in the reverse direction. Besides the fibres connecting globus pallidus to thalamus we have a pathway, the *ansa lenticularis*, also traversing the internal capsule, carrying impulses from the globus pallidus to the red nucleus, corpus subthalamicus, and locus niger. Fibres also run in the reverse direction, that is, from these three nuclei to the globus pallidus. The corpus striatum has, however, no direct connection with the spinal cord, though impulses from the corpus striatum to the red nucleus can be conveyed to the cord by the rubro-spinal tract. Neither is there a direct connection between the corpus striatum and the cortex, either by ascending or descending fibres. Indirectly, however, impulses may pass from corpus striatum to optic thalamus and so to cortex, and *vice versa*. As illustration of this isolation of the corpus striatum, I have a specimen showing a very extensive softening of the right cerebral cortex which had taken place about twenty years prior to the death of the patient. On making a section through the central ganglia it was found that, while the optic thalamus on the affected side was about a third of the size of the thalamus on the sound side, the corpus striatum on the affected side showed no appearance of atrophy whatever. The specimen confirms the view of the close connection of cerebral cortex with optic thalamus on the one hand, and, on the other, of the absence of any direct relationship between cortex and corpus striatum. The afferent fibres of the corpus striatum are thus derived almost entirely from the optic thalamus, and its efferent fibres are represented by the ansa lenticularis.

This, I am afraid, has been a rather lengthy introduction, but it seemed important that we should have a clear picture in our minds of the structure and connections of the basal ganglia if we are to form any reasonable conception of their functions and diseases.

Now, in dealing with the functions of the basal ganglia, I would like to point out, in the first place, that these structures are phylogenetically and embryologically much older than the cerebral cortex. And, in the same way, the globus pallidus is older than the putamen and caudate nucleus, the globus pallidus being met with as the paliostriatum in fishes, whilst the neostriatum (putamen and caudate) appear for the first time in birds. Also the ansa lenticularis, the tract which connects the globus pallidus with the subthalamic region, is to be regarded as the primitive motor pathway conducting impulses downwards to bulb and spinal cord. It gets its myelin early, and in the lower vertebrates constitutes an important motor tract. The same applies to the descending fibres of the optic thalamus. But as we ascend the animal scale the pyramidal pathway begins to appear—it is first seen in the higher reptiles: and as it increases in size the more primitive tracts lessen in importance, until in man the ansa lenticularis, as well as the efferent fibres of the posterior longitudinal fasciculus, have become comparatively insignificant. Even in man the pyramidal tract is one of the last to functionate, for it does not become myelinated until the first month after birth.

In the lower vertebrates, then, the basal ganglia would seem to represent the higher centres of the brain, where the optic thalamus constitutes the receptive centre for afferent, and the corpus striatum the centre for the direction and regulation of efferent impulses. In the lower animals we have, of course, a primitive form of sensation and motion. But as we ascend the animal scale, and such functions become more complex, the sensori-motor centres are to a large extent transferred to the cerebral cortex. The basal ganglia are in this way subordinated to higher centres: but, whilst the basal ganglia become of less importance, the optic thalamus still receives sensory impulses, and the corpus striatum would seem to regulate to a certain extent automatic and associated movements.

It has been suggested that with destruction of the higher centres, as with a cortical softening or hæmorrhage, that the lower centres might assume something of their former importance and take on the functions of the higher centre. This may possibly occur in the lower mammals, but it is at least doubtful if it can take place to any extent in man.

But now we must consider in more detail the relationship of these lower and higher centres, and, first, that of the optic thalamus to the cerebral cortex. We have already seen that the optic thalamus is an end station for what we may call the secondary sensory neurone: that is to say, the fibres of the fillet, of the optic and auditory tracts, all end in the optic thalamus. We have also seen that a third series of sensory neurones originate where the second ends—some of the fibres going to the sensory area of the cortex, and others to the mesial nuclei of the thalamus. But the question we have to determine is as to the destination of our various sensory impulses. Is it thalamus or cortex? Now, an answer to this problem is to be found in studying the cases of what is called Déjerine's syndrome. In this condition there is a lesion in the outer and posterior part of the thalamus, which is so placed as to interrupt the sensory fibres passing from thalamus to the sensory area in the region of the post-central gyrus, and which at the same time cuts the efferent fibres coming from this cortical area back to the thalamus.

There have now been many cases of Déjerine's syndrome put on record, and its chief symptoms are (*a*) hemianaesthesia involving deep sensibility (muscle and joint sense) much more than the superficial forms (tactile, painful, and thermal sensations): (*b*) spontaneous pain on the affected side, which pain is rather paroxysmal in character, and occurs over long periods of time: (*c*) there is usually also a degree of hemiparesis, but rarely associated with rigidity, and the plantar response is seldom extensor: (*d*) in addition, there may be involuntary movements of the athetoid or choreiform type. The hemiparesis is due to disturbance by the lesion of the pyramidal pathway as it passes in the internal capsule, and it is usually recovered from in a few days. The involuntary movements are probably caused in a similar manner, the lesion affecting the lenticulo-rubro-spinal tract. With the paresis and involuntary movements, however, we are not at present concerned. But the other two features of the syndrome demand our attention, for they at once suggest that, whilst deep sensibility is represented in the cortex, certain elements of superficial sense must end in the thalamus itself, the receptive mechanism (mesial portion) of which is not involved in the lesion.

This question has been investigated by Head and Gordon Holmes, who have made a careful analysis of a number of cases of Déjerine's syndrome, and they conclude that there are two masses of grey matter in which sensory impulses terminate, inducing what is called sensation—one, the mesial half of the thalamus, has to do with the elements of sensation; the other, the cortex, with the significance of sensation. Many sensations seem to excite to some extent both thalamus and cortex, but they do so in different manners, for the former is mainly affective whilst the latter is discriminative. Some stimuli would seem therefore to stop at the thalamus, whereas others are regrouped here and go on to the cortex. Thus, in Déjerine's syndrome, where the cortex is isolated, the loss of the primitive sensations of pain, touch, heat, and cold, if they are affected at all, is much more often partial than complete. Also, in a lesion of the cortex these sensations are never abolished, though they may be modified, tactile sense most, and pain least of all. According, therefore, to Head and Holmes, the thalamus is the centre for painful and tactile impulses, for the appreciation of heat and cold, and for the appreciation of heat apart from cold. It is also the centre for vibration sense. But the more complex qualities of touch and temperature are apparently cortical, for they are lost in Déjerine's syndrome. In this disease the patient appreciates simple contact, but he cannot determine the quality of the touch. For example, he cannot differentiate weights in the supported hand, or size and shape, or two points when applied simultaneously to the skin (compass test). He possibly has lost the sense of the spot touched, for all these qualities are represented in the cortex. The degree of heat and cold, too, is determined by the cortex, because this is a question of comparison. The appreciation of posture and passive movement, *i.e.*, of a new position in relation to a former one, and of weights in the unsupported hand, these are cortical in their representation, and so are lost in Déjerine's syndrome. It is this loss which determines the hemiataxia so often present in that disease. The cortex is therefore the centre for the recognition of passive movement, size, shape, weight, texture, degree of temperature, and degree of pressure. It is also the centre for the appreciation of the point touched, and touch by two points when applied simultaneously to the skin.

It is the cortex, too, which focusses attention on sensation. For example, with a cortical lesion the sense of vibration is not lost, but it may be less distinct and seem of shorter duration on the affected side than on the sound side. Likewise, the cortex seems to respond more readily to stimuli than the thalamus does, and the stimulus which affects the thalamus must have a considerable intensity before it produces conscious sensation. There is a presumption that many of the afferent impulses from the viscera reach the thalamus without the individual being aware of them. Under normal conditions we are not conscious of the movements of the stomach and intestines which go on during the process of digestion. But increase the intensity of these movements and we may suffer discomfort if not actual pain. Head and Holmes suggest that this inexcitability of the thalamus may, in part at least, be due to inhibition by the cortex through the cortico-thalamic fibres. If this inhibition is lessened the excitability of the thalamus will increase, and will permit of impulses reaching consciousness, which would not do so under normal conditions. It is possible that this lessened inhibition is the cause of many of the visceral discomforts complained of in hysteria, neurasthenia, and other functional disorders.

It is in this way, too, that we may explain the subjective pain and discomfort on one side of the body which is such a striking feature of the Déjerine syndrome. We have seen that the lesion here cuts off these inhibitory fibres coming from cortex to thalamus; and this will permit of over-action of the thalamus, will, in other words, allow of certain disagreeable stimuli reaching consciousness which would not do so under normal circumstances. This applies not only to subjective, but also to objective sensation. For example, in Déjerine's syndrome a tactile impulse may produce a greater response on the affected side than on the sound side. Also pleasant stimuli, such as heat, may produce a greater degree of pleasure on the affected side. Indeed, the general mental state of pleasure or discomfort is usually more marked on the affected side. Another point of interest is this, that although sensation may be considerably lessened on the affected side, when a stimulus is applied with sufficient intensity to produce a sensation, this sensation is felt more acutely on the affected side than with a similar degree of stimulus applied to the sound side. The sensation is therefore not in proportion to the force of the stimulus, but depends rather on the stimulus reaching the thalamus, and then the response is greater on the affected side. And not only is this sensation excessive, but it is also of much longer duration than on the sound side.

Head and Holmes maintain that this excessive response of the thalamus is not due to local irritation, for it comes on during the stage of recovery rather than with the onset of the lesion, and it usually persists for years. Also, local irritation will not explain the increased response to agreeable sensations.

In diseases of the thalamus the symptoms must, of course, vary with the exact seat of the lesion. Thus a lesion destroying the whole of the thalamus will produce loss of all its functions, and so abolish sensation of every sort on one side of the body. A much smaller lesion, but so placed as to interrupt the fibres of the fillet as they end in the ventro-lateral nucleus, must also cause hemianæsthesia. With Déjerine's syndrome there is, in the different cases, a variation in the size of the lesion and in the exact part of the thalamus involved, and so a corresponding variation in the symptoms. There may in this way be little disturbance of tactile, painful, or thermal sense, or very considerable impairment of all of these. In the former case the lesions will probably be limited to the sensory pathway as it leaves the thalamus; in the latter, the receptive part of the thalamus will also be implicated.

We now pass on to consider the functions of the corpus striatum, and here our views regarding that organ also depend to a large extent on a study of its morbid anatomy as met with in certain diseases. The first of these to be considered is paralysis agitans.

Now, according to Ramsay Hunt, paralysis agitans is not a specific disease, but a symptom complex due to a variety of morbid processes. It has, as you know, for its clinical features progressive rigidity, typical facies, attitude, gait, and articulation. There is lack of emotional expression, and a special type of tremor. In some cases there is also a subjective sensation of heat and a tendency to profuse sweating. Hunt distinguishes three forms of this syndrome, namely, (*a*) the presenile and senile, (*b*) the symptomatic, and (*c*) the juvenile form. In the first two the symptoms depend on senile and vascular changes in the corpus striatum, but in the juvenile form it is a system disease limited to the large ganglion cells of the globus pallidus, and it is apparently due to a primary and progressive atrophy of these neurones. Hunt describes four cases of this juvenile form, beginning at the thirteenth, fifteenth, twenty-sixth, and thirtieth years respectively. In general symptomatology these cases resemble the paralysis agitans of old age, but differ in (*a*) their early onset, (*b*) the more rapid progress of their symptoms, (*c*) the early involvement of the muscles of face, tongue, eyelids, and muscles of eyeball, and (*d*) the infrequency of sensory disturbances. He gives a very full report of the appearances of the nervous system in one of his cases which died of inanition at the age of 40. To the naked eyes the nervous system seemed normal, and the only abnormality on microscopic examination was met with in the corpus striatum. Here the smaller cells of the putamen and caudate nucleus were unchanged, but the larger cells were lessened in number and showed various stages of atrophy. In the globus pallidus these cells were reduced to about a fifth, and in the putamen and caudate nucleus to almost a third of the normal number. The cells of the optic thalamus, corpus subthalamicum, red nucleus, and motor cortex were unaffected. There was no interstitial change in the corpus striatum, unless an increase in the number of neuroglia cells such as is always met with in a primary degeneration of ganglion cells. The pyramidal pathway and strio-thalamic fibres showed no signs of degeneration, but there was distinct atrophy of the ansa lenticularis. The degenerative process was therefore confined to the large ganglion cells of the corpus striatum, and more especially those of the globus pallidus and their processes passing down to the hypothalamic area. It would seem, therefore, that destruction of this system of neurones produces the rigidity and tremor met with in paralysis agitans.

The etiology of the juvenile type of paralysis agitans is unknown. It is a family disease; that is to say, two or more members in a family may be affected. Otherwise it resembles in its pathogenesis Erb's spastic paraplegia or progressive muscular atrophy: only, instead of the upper or lower motor neurones being affected, we have this neurone which is entirely extra-pyramidal, and which, starting in the globus pallidus, extends downwards to the region of the red nucleus.

This same series of neurones may, of course, be involved by a gross lesion, such as a hæmorrhage or softening in the globus pallidus or its descending pathway, and this is probably the most common cause of the paralysis agitans occurring in old age. Certain cases of lethargic encephalitis show the characteristic symptoms and signs of paralysis agitans, and in these there may have been a perivascular exudation into the lenticular nuclei. A number of such cases have been described during the past year, and I have at present in my wards at the Royal Infirmary a case of this sort which, to begin with, had the characters of lethargic encephalitis, and which later developed the facies, attitude, gait, speech, and tremor of a typical paralysis agitans. In such cases the lesion is not necessarily confined to the corpus striatum, but this nucleus is presumably involved in the inflammatory process, and so its functions are disturbed.

Another disease of the corpus striatum is the progressive lenticular degeneration of Kinnier Wilson. It is a disease of adolescence, with a tendency to run in families, and it has always associated with it a cirrhosis of the liver. It is presumably toxic in origin, the toxin being elaborated, or stored, in the liver, and reaching by the blood-stream the corpus striatum, for which it seems to have a specific action. There is no evidence of its being a form of syphilis, and, indeed, as far as is at present known, it is a specific disease. On *post-mortem* examination there is found to be a symmetrical and bilateral degeneration in the corpus striatum. The putamen is most affected, then the globus pallidus, and the caudate nucleus least of all. All degrees of atrophy are to be seen, sometimes only a slight vacuolation of the lenticular nucleus, in other cases marked disintegration, and in others again very definite cavity formation. The disease seems to commence round the vessels of the lenticular nucleus, with, in the acute cases, a round-cell proliferation, and, later, proliferation of the neuroglia. There have been no primary changes noted in the vessels, no arterio-sclerosis, and no thrombosis. The process has a resemblance, therefore, to what occurs in certain cases of syringomyelia, for there is the same glia overgrowth and the same tendency to cavity formation. There is degeneration found in the ansa lenticularis and in the strio-thalamic fibres, but the pyramidal pathway remains intact.

The symptoms have a certain resemblance to the juvenile cases of paralysis agitans. There is tremor, and progressive rigidity which may ultimately involve all the muscles of the body, except the muscles of the eyeball. There is muscle weakness or myasthenia, but no true paralysis, though the rigidity may determine much muscular disability. Thus, the expression becomes mask-like, and there may be both dysarthria and dysphagia. Sometimes articulation is so much affected that the patient's speech is almost unintelligible. With the rigidity there are contractures, especially in the distal segments of the limbs; but, in spite of contracture, if an effort be made a fairly wide range of voluntary movement is possible. The tendon reflexes are active, but not exaggerated, and there is no sensory disturbance. In some cases there are tonic and clonic spasms, and in some a tendency to choreiform and athetotic movements. In time, too, there are signs of mental deterioration in that the patient seems facile, childish, and more docile than normal. Increased emotionalism, as shown by involuntary laughter, is common in most cases.

The illness is always fatal, the duration in the acute cases being from four to thirteen months, and in the chronic cases about four years. When death occurs it is from inanition, the result of the toxæmia, and the general debility induced by the inability to swallow. Ultimately, emaciation may be pronounced.

A third disease which has symptoms with some resemblance to progressive lenticular degeneration is Huntington's chorea. This is a hereditary condition, sometimes extending through several generations, and usually coming on between 30 to 40 years of age, but in certain cases much earlier. There is general motor restlessness with involuntary and purposeless movements, ultimately involving all muscles normally under voluntary control. The movements resemble those of Sydenham's chorea, and, as in that disease, speech and the gait may have the same peculiar jerky and erratic character. For a time an effort of will can control the movements. There is no true paralysis, and the tendon responses are not abnormal. Sensation, too, is intact. There is, however, nearly always some mental deterioration. The patient cannot concentrate, he is absent-minded and apathetic, and sometimes the condition goes on to actual idiocy. The disease is incurable, but may last for ten to thirty years. In the later stages the patient becomes bed-ridden, and dies of cachexia or some complication. *Post-mortem,* in a number of cases there has been found atrophy of the head of the caudate nucleus, and also to a less extent in the outer part of the lenticular nucleus. The essential lesion, according to Hunt, would seem to be a degeneration of the cells (smaller ganglion cells) of the caudate and putamen, and along with this proliferation of the neuroglia cells. No degeneration was to be found in the strio-thalamic fibres or in the ansa lenticularis, and so the disease would seem to consist chiefly of a degeneration of the smaller intranuclear cells of the corpus striatum. From this Hunt concludes that it is destruction of these cells which determines the choreic movements. But the disease does not always limit itself to the central ganglia, for atrophic changes are at times met with in the cerebral cortex, especially in the frontal area, and it is this lesion which doubtless explains the progressive dementia above referred to as being present in certain of the cases.

If, then, this account of the pathological anatomy of Huntington's chorea is correct, it shows that it is a disease of the same type as the juvenile form of paralysis agitans, the difference being that in the former it is the smaller cells, whilst in paralysis agitans it is the larger cells of the corpus striatum which have undergone degeneration.

A fourth disease with its lesion in the corpus striatum is primary or idiopathic athetosis, sometimes called double athetosis (*athétose double*), which is apparently the same condition as that described by Madame Vogt and now sometimes spoken of as the Vogt syndrome. It usually begins in infancy, but may not appear until adolescence. The outstanding symptom is athetoid movements of practically all the voluntary muscles of the body, and specially marked on voluntary movement. In the face these movements give rise to a great variety of grimaces, and sometimes there are spasmodic contractions of the diaphragm, giving the voice a jerky quality. There is also spasticity of the muscles involved, and this with the involuntary movements induces difficulty in phonation, articulation, mastication, and deglutition. The symptoms are really those of a pseudo-bulbar paralysis with spasticity and athetosis. But there is no relation to hemiplegia, for the pyramidal tracts are intact. The lesions found *post-mortem* are chiefly in the putamen and caudate nucleus, in which there is an extensive destruction of ganglion cells, both large and small; Madame Vogt regards this as a true dystrophy. In the atrophic areas there is also a network of fibres to be seen, which accounts for the "*état marbré*" described by various workers. The globus pallidus is not much affected, and the ansa lenticularis is said to be normal.

The *post-mortem* changes here, if I understand them correctly, resemble those in Huntington's chorea in that in both diseases the smaller ganglion cells of the caudate nucleus and putamen are destroyed. But in Vogt's syndrome the larger cells of these areas are presumably also involved, and it is this which possibly determines the rigidity in the latter disease. The rigidity, in turn, may also account for the character of the involuntary movement—that is to say, it is athetotic rather than choreic.

From a study of these four diseases, then, one might conclude that the essential symptomatology in lesions of the corpus striatum are rigidity, tremor of the paralysis agitans type, choreic movements, athetosis, and mobile spasm. The rigidity and tremor would seem to depend on degeneration of the larger cells of the globus pallidus, and the choreic movements on a similar change in the smaller cells of putamen and caudate nucleus. Athetosis is possibly due to degeneration in both these types of cell occurring at the same time.

We might say, therefore, that the corpus striatum is a centre with certain co-ordinating and inhibitory functions, controlling associated and automatic movements. Like the motor cortex, it exercises an inhibition on muscle tone, so that with a lesion of the globus pallidus or its projecting fibres we have increased tonicity. Such a lesion produces the rigidity of paralysis agitans, whereas a lesion of the pyramidal tract gives the rigidity of lateral sclerosis.* In lateral sclerosis the corpus striatum is intact, but its function being disturbed in paralysis agitans the patient is dependent on the cortical centres for taking on the functions of this automatic and association centre. In this way we may explain the patient's difficulty with automatic movements, his slowness in initiating movement, and the propulsion gait, a gait which is different from that of lateral sclerosis where the trouble is due to weakness as well as rigidity.

The tremor is difficult to explain, but it has been suggested that it may be a disturbance of tonus, that it is a not quite continuous rigidity, there being relaxations alternating with contractions.

As to the small cells of the putamen and caudate nucleus, they would seem to have an inhibitory and co-ordinating effect on the larger cells of globus pallidus, through their association fibres. They would seem to control and regulate movements, for when destroyed we get choreic and athetotic movements. But it must be understood that similar involuntary movements may also result from lesions elsewhere, *e.g.*, in cortex, superior cerebellar peduncles, rubro-spinal tract. Athetosis, as we have seen, is sometimes present in Déjerine's syndrome. This may be due to the lesion in the thalamus disturbing the functions of the corpus striatum through the thalamico-striate fibres; or, possibly, the lesion does not limit itself in such cases to the thalamus, but may also involve the putamen, or perhaps the lenticulo-rubro-spinal pathway.

The functions of the corpus striatum have been also studied by means of experimental work on animals, but this has not thrown much light on the subject. In monkeys the corpus striatum does not respond to electrical stimulus as does, for instance, the motor cortex. There is thus no evidence of a similar motor centre in the corpus striatum, nor is there by this means any evidence of a centre for automatic movements. Also experimental lesions, placed in various parts of the corpus striatum, failed to show any definite defect of motility. It is to be noted, however, that the lesions were not bilateral. But, in spite of these experiments, the functions of the corpus striatum must be chiefly motor, for most of its fibres are efferent, and it is apparently uncontrolled by the cortex.

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* Hunt points out that the rigidity in these two conditions differs in that in the latter the rigidity disappears with section of posterior roots, whilst it does not do so in the rigidity of the former.

The central ganglia, however, have been thought to contain also centres for emotional movements, as well as for the various viscera. It is known that in hemiplegia, especially in a double hemiplegia, that whilst there is loss of power in muscles for voluntary movement, the same muscles may respond in even an exaggerated way to an emotional stimulus. In pseudo-bulbar paralysis, for example, the facial muscles do not contract voluntarily, but they contract quite fully if the patient laughs or cries. The loss of voluntary movement is due to the lesion in the pyramidal tracts, and it has been argued that the emotional response depends on centres in the central ganglia sending impulses to the bulb by extra-pyramidal tracts. The mechanism of these reactions of an emotional nature is not quite clear, but there seems reason to think that the emotional centres are not present in the corpus striatum, for its destruction, as in progressive lenticular degeneration, does not lessen but rather increases the tendency to emotional movements. Also, as we have just seen, stimulation of the corpus striatum gives rise to no movement of any sort.

But the same does not apply to the optic thalamus, for stimulation of certain of the thalamic nuclei has given rise to muscle movements (Sachs), and lesions limited to the thalamus have been followed by loss of emotional movement, whilst voluntary movement of the same muscles remained unimpaired. We have seen that the functions of the optic thalamus are controlled to a certain extent by the cortex by means of fibres passing through the internal capsule. With a lesion in this tract, and inhibition thus removed, it may be that emotional movements are more readily produced, as is the case in hemiplegia than in a normal state of health. And Dana has shown that in Déjerine's syndrome the emotional movements are not unduly active, unless the lesion involves the internal capsule as well as its portion of the optic thalamus.

What I have just said applies chiefly to emotional movements as expressed by the facial muscles. But emotions are also expressed in the movements of respiration, in the heart-rate, by vasomotor disturbances, and in movements of the intestine and bladder: and it is said that the thalamus has centres for, and exerts a certain amount of control over, all these various functions. It is not uncommon in hemiplegia to have visceral disturbances. For example, there may be polyuria, precipitancy of micturition, or enuresis. This means an over-excitability of the bladder centre, which, again, may be the result of lack of cortical inhibition. The emotional disturbances met with in hysteria, neurasthenia, and other so-called functional disorders, may also be explained in the same way—that is, as being due to a lessening, for the time being, of the inhibitory influence from the cerebral cortex.

But I must not pursue these speculations regarding centres for the emotions, for I feel I am not now on very sure ground, and, in any case, I have exhausted the time at my disposal.

In concluding, however, I should like to remind you that the views I have tried to bring before you as to the functions of the central ganglia require, most of them at least, confirmation, and some of them, I have no doubt, revision. And so I would enter a plea for a careful examination of the symptoms of the various morbid conditions in which the central ganglia may be implicated, and, when opportunity occurs, for a detailed histological examination of these ganglia with their efferent and afferent pathways. Most of the diseases to which I have referred are rare, so that such cases as do come under observation should be taken full advantage of. Vascular lesions, such as small softenings, are, on the other hand, comparatively common in the corpus striatum and optic thalamus. In hemiplegia the lesion in the internal capsule not infrequently involves a portion of one of these nuclei. And this seems to me a reason for a detailed examination of all cases of hemiplegia, whether complete or partial, not only in regard to their motor, but also as to their sensory, disturbances. If this be done in conjunction with a subsequent *post-mortem* examination important information might be obtained from at least a proportion of the cases in regard to some of the problems I have been discussing with you here to-night.

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NOTE ON RECENT WORK ON AURICULAR FLUTTER AND AURICULAR FIBRILLATION.

THE application of direct experiment to the elucidation of the problems of cardiac function finds further support in the latest articles by Dr. Thomas Lewis. Perhaps the most important recent addition to our knowledge of cardiac pathology is contained in the discussion and reports of experiments recently published by him in *The Mechanism and Registration of the Heart Beat* (1920), and in *Heart*, vol. vii, No. 4, relating to auricular flutter and fibrillation.

It had for some time been accepted that a relationship existed between these two conditions and auricular extra-systoles and simple paroxysmal tachycardia of auricular origin, in so far that each was due to stimulus arising in some focus other than the normal pacemaker.

Extra-systoles can be produced experimentally by stimulating the auricle, and these give electro-cardiographic curves corresponding accurately with those obtained in the human subject.

Similarly, paroxysms of tachycardia can be produced by rapid stimulation which exhibit curves in every way similar to clinical curves. The maximum auricular rate for this condition has been fixed at 200 per minute, and up to this point the ventricle usually follows the auricle in regular sequence.

It has been recognised for about a decade that the auricle may beat rhythmically at rates between 200 and 350, but in these cases the ventricle fails to respond to each beat of the auricle, a degree of heart-block being established. This condition, named auricular flutter by Jolly and Ritchie, has been recognised as a separate entity. While the great rate might explain the failure of the ventricle to respond to each impulse, it was felt that some other factor, as yet unexplained, separated flutter from paroxysmal tachycardia. Among other points it had to be explained why electrical curves from patients with paroxysmal tachycardia varied according to the situation of the focus producing the paroxysm, yet curves from different patients with flutter presented a remarkable uniformity. In the book and journal referred to at the beginning of this note, Lewis enters very fully into the conditions underlying this disorder, and by a series of experiments on the exposed heart of the dog, has established an explanation which was first put forward by Mines and Garrey to cover an allied condition.

Mines, in 1913, showed that if a ring of muscle were cut from the auricle of the ray fish, it was possible, by a suitable rate of stimulus applied at one point, to cause a wave of contraction to travel round the ring in one direction only, and further, that the wave might continue to travel round the ring even after the original stimulus was withdrawn. This he termed "circus movement."

Lewis, by a series of most exacting and carefully performed experiments, has been able to demonstrate that in dogs in which auricular flutter was produced after stimulating the auricle with electric shocks at a very rapid rate, the central excitation wave conforms to circus movement. The wave travels in a circle which includes the superior vena cava and a portion of the tissue between it and the inferior cava, or in some instances it may include both caval orifices. Throughout the remainder of the auricular muscle the excitation wave follows centrifugal paths from the central wave. The curves obtained from the animals by the ordinary leads during the experiments were ordinary flutter curves.

When the rate of stimulation applied to induce the flutter is further increased it is found that the flutter is impure, and this has been shown to be due to the centrifugal waves following less direct paths through the remainder of the auricular muscle owing to a depression of conductivity in the muscle itself.

A further series of experiments to be published in a later article connects these two types with auricular fibrillation. Some of the published tracings of impure flutter could readily be mistaken for fibrillation. He has definitely abandoned the view that it is due, as was formerly thought, to multiple foci of impulse formation in the auricle. In flutter, impure flutter, and fibrillation circus movement is accepted as the basal condition.

In pure flutter the centrifugal waves from the central circus wave pass over equal stretches of auricular muscle in equal times.

In impure flutter the centrifugal waves are deflected through new and "sinuous" paths because of presumed local obstruction or block in the muscle itself.

In auricular fibrillation it is suggested that not only does this occur in the outlying portions of the auricle, but that the central wave is itself involved in the process.

This series of articles on these subjects is very convincing, and to any who appreciate exact reasoning rather than simple hypothesis it will prove most instructive reading.

G. A. A.

Obituary.

SAMUEL SLOAN, M.D., F.R.F.P.S.G.,
GLASGOW.

THE medical profession and the public of Glasgow cannot but feel a distinct sense of loss through the death of Dr. Samuel Sloan. He had been for so many years—his jubilee of practice arrived with the first year of the war—a well known doctor of a type not now found in our cities at least, a general practitioner in extensive practice with special knowledge and reputation in more than one branch of medicine, and devoted to scientific pursuits outside the practice of medicine. To those who knew him Dr. Sloan was a "young man," physically and mentally, in spite of his seventy-eight years. It was characteristic that a few days before his death he was engaged in his professional duties, alert in thought, active in movement, interested in affairs, and apparently in good health. A sharp acute pneumonia brought his end as he might have wished it, quickly, and in the midst of work.

Graduating M.B. at Glasgow University in 1866, and M.D. in 1870, Dr. Sloan, after spending some little time as an assistant, began practice on his own account in Parliamentary Road, Glasgow, and there rapidly achieved success. From the earliest days his aptitude for obstetrical work was marked, and it was only fitting that he should soon be appointed obstetric physician to the Glasgow Maternity Hospital. Dr. Sloan was associated with this Hospital for many years, doing excellent work both as a physician and teacher, and maintained a keen interest in its welfare after his active service was over.

For a time he acted as consulting physician to the Royal Samaritan Hospital in the first years of its development, and latterly he held a similar appointment to the Glasgow Hospital for Diseases of Women. For many years Dr. Sloan was examiner in midwifery and gynæcology in the University of Glasgow, and also for the Fellowship and for the Licence of the Royal Faculty of Physicians and Surgeons, Glasgow. As a teacher he was eminently successful, and as an examiner scrupulously just and fair to the students. His contributions to the literature of obstetrics were numerous, dealing mostly with the difficulties arising from obstruction at the pelvic brim.

Dr. Sloan was greatly interested in electro-therapeutics, and during an active and busy professional life found time to work extensively at the subject, and was regarded as a pioneer worker and a noted authority. He published several papers in the medical journals dealing with various aspects of electro-therapeutics—one describing a new Farradimeter recognised to be of considerable value. In 1917 he collected his experiences in a volume entitled *Electro-Therapy in Gynæcology*, which received high commendation from those fitted to judge of its value. We have been informed that at the time of his death he was engaged, on the invitation of a firm of medical publishers, on a book on ionic medication in the whole field of medicine, and had already begun enquiries amongst the medical electrical workers in our hospitals for actual facts and authenticated information on this form of treatment. His reputation as an authority on electro-therapeutics was thoroughly acknowledged beyond Glasgow. In the years 1909-1910 he was president of the Electro-therapeutic section of the Royal Society of Medicine, London, and in 1914 was president of the section of Electro-therapeutics and Radiology at the meeting of the British Medical Association in Aberdeen. The Gynæcological Society of Chicago, as a mark of esteem for his work in obstetrics, gynæcology, and electro-therapeutics conferred upon him its Honorary Fellowship.

His keen, restless mind found its recreation in the study of electricity and mechanics, marine biology, and astronomy. Like every man with a hobby, his life became a full and buoyant one; approaching old age had no terrors, but rather was gracefully met and warded off by occupation of every hour. Many of the instruments employed in his electro-therapeutic work were devised and made by himself in his own little workshop.

Nothing gave him greater delight than long summer afternoons spent in the study of marine biology, and it was well known that he valued highly his position on the Board of the Biological Station at Millport as the representative of the Royal Faculty. Astronomy was the third of his extra-professional studies, and again his workshop provided scope for his skill in altering and improving his telescope.

A man of these activities could not be other than generous and tolerant, pleasant and companionable to his professional brethren. To his wide circle of patients he must have been at once the kind, skilful doctor and helpful friend.

Dr. Sloan is survived by his widow and all his family but one son, who was killed in the war. Two sons and a daughter are members of the profession of medicine—Dr. Elizabeth Sloan Chesser, Harley Street, Dr. Samuel Sloan, Lieut.-Colonel, R.A.M.C.(T.), and Brevet-Colonel John Macfarlane Sloan, C.M.G., D.S.O., R.A.M.C., D.D.M.S., Mesopotamia.

WILLIAM HERMANN SIEGER, M.B., CH.B.GLASG., D.T.M.,
WEST AFRICAN MEDICAL SERVICE.

WE record with regret the death of Dr. W. H. Sieger, which took place in a nursing home in Glasgow on 5th October. He was a native of Greenock, and the seventh son of a well-known citizen of that town, the late Mr. E. Sieger. Dr. Sieger graduated at Glasgow University in 1906, and shortly thereafter joined the West African Medical Service under the Colonial Office. During the war he was attached to the Cameroon Expeditionary Force, and was mentioned in dispatches. Dr. Sieger was 39 years of age, and is survived by his widow.

HELEN BARR WILSON, M.B., CH.B.GLASG.,
UDDINGSTON.

WE regret to announce the death of Dr. Helen Barr Wilson, which took place suddenly at Ruchill Hospital on 5th October.

Miss Wilson graduated M.B., Ch.B., at Glasgow University in 1919, and thereafter took up a resident appointment in the Royal Hospital for Sick Children, Glasgow. She was appointed to the resident staff of Ruchill Hospital early in September, and was carrying out her duties there when she contracted her fatal illness. Miss Wilson, who was 24 years of age, was the daughter of Sir Thomas and Lady Wilson, of Flemington House, Uddingston, to whom and to her sisters we extend our sympathy. Miss Wilson was, throughout her medical course, a bright and diligent student, who found time to take a leading part in the corporate and social life of the University. Her ability and charm of manner gained her many friends amongst her fellows, by whom her loss is deeply felt.

CURRENT TOPICS.

Glasgow University.—At a graduation ceremony held on 11th October the degrees of M.B., Ch.B. were conferred upon the following:—

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY (M.B., Ch.B.)

I. With Honours.

Alan Percy Agnew.

II. With Commendation.

Thomas Todd Hutchison.
Thomas Stewart Sargent, M.A.

III. Ordinary Degrees.

Alexander Gardner Aitken.
Margaret Bennett, M.A.
Donald Eadie Brown, M.B.E.
William Armour Galbraith.
Dorothy Jean Loudon Gallie, M.A.
John Gray Gilmour.
Charles Glen.
Mrs. Agnes Scott Glover.
Charles Napier Gordon.
Mary Burns Grant.
Margaret Gray.
Hugh Wardrop Howieson.
David Imrie.
John Alexander Jenkins.
Henry John Macbride.
Alexander Mitchell M'Clure.
William Ritchie M'Crae.
Andrew Buchanan Macdonald.
Edward Parlane Macfarlane.
Donald MacKenzie.
Jean M'Iver Mackintosh.
Marie Josephine M'Naught.
Alexander M'Callum Macqueen.
Farquhar M'Vean.
Matthew Findlay Guthrie Main.
Arthur Markson.
Effie Niblock.
James Prentice.
Mary Russell.
Mary Shiskin, B.A.
Alexander Walker Smyllie, M.A.
Francis Cyril Speechly.
Donald Stewart, M.A.
John Stirling, M.A.
Dorothy Mary Summers.
James Dunlop Whiteford.

Royal Faculty of Physicians and Surgeons, Glasgow.—At the monthly meeting of the Faculty held on 4th October Sir Donald MacAlister, K.C.B., M.D., Principal of Glasgow University, was presented by the President in a few well-chosen words, and thereafter admitted an honorary Fellow.

At the same meeting the following were admitted Fellows:—Joseph Macnaughtan Christie, C.B.E., M.D., F.R.C.S.Ed.; Arthur Muir Crawford, M.D.; Alfred David Gorman, L.R.C.P.Ed., L.R.C.S.Ed., and L.R.F.P.S.G.; Adam Brown Kelly, M.D., D.Sc.; and James Eric Paterson, M.B., Ch.B.

At the recent examinations conducted by the Dental Board of the Faculty the following candidates satisfied the examiners, and were admitted Licentiates in Dental Surgery:—Maimie Jackson, D.D.S., Watford; Marion Smith Mackinnon, Drymen; Ronald Gillan Clouston, Glasgow; Elizabeth Watson, Rutherglen; William Kenyon Barrie, Glasgow; Joseph Ignatius M'Elhaw, Dumbarton; John Gerald Collee, Bo'ness; James Innes Coventry, Rutherglen.

THE ANDERSON COLLEGE OF MEDICINE, GLASGOW.—The Governors of the College have appointed Dr. N. Morris to the Chair of Physiology, and Dr. John R. C. Gordon to that of Materia Medica and Therapeutics. Dr. Morris is a graduate of Glasgow University, both in science and medicine, and has for some time been assistant to Prof. Noël Paton in the Physiological Department in the University. He has also held the Muirhead Demonstratorship in Physiology. Mr. Gordon holds the Licence of the Triple Qualification Board, and is an experienced pharmacist. He has already acted as interim Lecturer on Materia Medica and Therapeutics in the College.

CLINICAL TEACHING IN THE VICTORIA INFIRMARY.—The formal inauguration of clinical teaching in the Victoria Infirmary took place on 19th October. Mr. Gray, chairman of the board of managers, presided over a large audience which included Sir James Mackenzie, Sir Donald MacAlister, Sir Hector Cameron, Mr. Maylard, Dr. Leask, and many members of the medical profession. The generosity of Mr. MacBeth, who had gifted £20,000 to the Infirmary for the purposes of clinical teaching, had enabled the managers to meet the request of the University authorities for facilities for students. A scheme had been drafted and it was intended, after the present rush of students had been coped with, to continue the school as a post-graduate teaching institution. Sir James Mackenzie gave an address on medical education which is published in the present issue at p. 257.

MINISTRY OF HEALTH.—The Minister of Health has appointed Dr. Alexander Macphail to be a medical officer of the Ministry. Dr. Macphail was a distinguished student and graduate of

Glasgow University (M.B., C.M., 1894), and after graduation was for some years assistant to the Professor of Anatomy. He was then appointed to the Chair of Anatomy in St. Mungo's College, Glasgow, a post which he held with great acceptance for a number of years before proceeding to London as Lecturer in Anatomy at St. Bartholomew's Hospital. He has also acted as Secretary of the Anatomical Supplies Committee of Great Britain. It is announced that his first duties in the Ministry of Health will be in connection with the administration of the Anatomy Acts, which has been transferred from the Home Office to this Ministry.

ROYAL INFIRMARY, GLASGOW.—Mr. Charles Read, L.D.S., L.R.C.P.E., &c., has been appointed Assistant Medical Electrician.

GLASGOW CONVALESCENT HOME, LENZIE.—The Managers have appointed Mrs. Catherine Johnston to the post of matron, in succession to Miss Tisdall, who is retiring after a long period of service. Mrs. Johnston has been in the service of the Scottish Branch of the British Red Cross Society since 1915, and from 1916 to 1919 acted as matron of various hospitals under their control, notably of Woodside Hospital. She is at present matron of the Warren Park Auxiliary Hospital, Largs.

WEST OF SCOTLAND FOREIGN SERVICE MEDICAL CLUB.—The second annual meeting of this Club was held on the evening of 19th October in the Grosvenor Restaurant, Glasgow, when a party of about 160 dined under the genial presidency of Mr. W. Adam Burns, M.B., T.D. After dinner, office-bearers for the ensuing year were appointed as follows:—President—Thos. Kay, D.S.O., M.B., T.D.; Vice-President—James Livingstone Loudon, M.D., T.D.; Hon. Secretary and Treasurer—David Shannon, M.B.; Members of Committee—John McKie, D.S.O., M.B., T.D., and Thomas D. Laird, M.B. Amongst the guests were Professor Francis D. Boyd, C.B., C.M.G., M.D., and John Young, D.S.O., M.D., the President and Secretary of the corresponding club in the East of Scotland. From the satisfactory state of its finances, its greatly increased membership, and the enthusiasm of its members, it is evident that the success and prosperity of the Club are assured.

MEETINGS OF SOCIETIES.

THE ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

SESSION 1919-1920.

MEETING VII.—16TH APRIL, 1920.

The President, MR. A. ERNEST MAYLARD, *in the Chair.*

I.—TWO CASES OF ARTICULAR EFFUSION (BOTH KNEE-JOINTS), DUE TO CONGENITAL SYPHILIS.

BY DR. J. SCOULAR BUCHANAN AND DR. WALTER W. GALBRAITH.

Dr. Buchanan gave the history of the case before bringing in the patient.

Boy, J. G., æt. 11 years, previously healthy as far as his parents' statement goes. In July, 1919, he suffered from "bloodshot eyes," for which he was seen by the family doctor. This condition cleared up, but a month later he complained of feeling tired in his legs. No particular attention was paid to this till his mother noticed that his left knee was swollen. A few days later the right one also swelled. There was little or no pain, but the boy was inclined to sit rather than walk. Another doctor was consulted, and iodex ointment prescribed. The knee condition, however, did not clear up, and his mother brought him to the Out-door Department, Western Infirmary, on 9th February, 1920, when I saw him.

The complaint was of swelling of knees, and a disinclination to walk. There was considerable fluid present in both knees—about same amount in each. Not tender or painful, and with no restriction of movement. It was obviously syphilitic, as he showed keratitis fissures, pegged teeth, &c. There is a history of one miscarriage after this boy was born. The boy's blood gives a positive Wassermann, and the father's positive also. I did not have the mother's examined. Since the time I first saw him the amount of fluid in the knees has varied, and is at present less than at first. The conjuncto-keratitis is still active, but diminishing.

So far no treatment has been given, but this is to be begun next week.

Dr. Galbraith's case.—This patient, R. M., age 13 years, was first seen by me at my Dispensary at the Western Infirmary on 3rd March. He was then suffering from bilateral hydrops of the knees. He complained only of stiffness in the knee-joints. He has always been healthy, and the mother says that, apart from slight curving of the "leg bone," which she noticed in childhood, she had had no trouble with him.

In September, 1919, while playing, the patient fell from a height of six feet on to his knees, but apart from cut hands he suffered no pain or discomfort. During the following week he complained of stiffness of the knee-joints, and his mother noticed that they were swollen. The swelling increased until they were in their present condition. A fortnight later, as the swelling persisted, the mother consulted their family doctor, who ordered the patient to bed and treated him in the usual way with elastic bandages, &c. The patient remained in bed for four months without any improvement in the condition.

On examination, both knees were swollen but painless, only stiff; apart from very slight "sabre-blade" tibiæ, I found no evidence of congenital syphilis. The Wassermann reaction was positive. He is now under the care of my colleague, Dr. William Snodgrass, jun., in the Venereal Department of the Western Infirmary.

The mother was married twenty-eight years ago. She has had seven children, the patient being the second youngest. She had a miscarriage at two months before her first child, who was born twelve months after marriage. The third child died, when three and a half years old, of catarrh of the stomach. Apart from that, she states that all the other children are healthy. The eldest is 27 years old, is married, and has three children. His mother states that he has always enjoyed good health, but is not strong. The mother was healthy till after marriage, but has not been so strong since. Her Wassermann reaction is reported as "suspicious." The father is big, strong, and healthy. He is reticent, and I was unable to get any definite history from him except that he has always enjoyed the best of health. His Wassermann reaction is "positive."

II.—CASE OF ISCHÆMIC CONTRACTURE OF FORE-ARM, OCCURRING AFTER FRACTURE OF BOTH BONES OF THE LEFT FORE-ARM; TREATED BY MANIPULATION AND SPLINTING.

By Mr. Archibald Young.

Mr. Young's communication was published as an original article in our issue for October, 1920, p. 215.

III.—A SPECIMEN OF MAIER'S FILLER-SHAPED (TRICHTERFÖRMIG) HYPERTROPHIC STENOSIS OF THE PYLORIC ORIFICE, REMOVED BY OPERATION FROM AN ADULT.

By Mr. A. Ernest Maylard.

W. S., a woman, aged 36 years, was admitted to the Victoria Infirmary under my care on 1st December, 1919, complaining of vomiting after food and of constipation.

The history of her complaint, as taken by my Resident Assistant, Dr. Borthwick, was that seven weeks previous to her admission she commenced to have pain in the right hypochondrium, followed by vomiting shortly after taking food. Since the onset of her symptoms both the severity of the pain and the frequency of vomiting had steadily increased until, at the present time, they were of daily occurrence: and relief could only be obtained by emptying the stomach. The pain, although originally situated in the hypochondrium, had shifted to the right iliac fossa. On examination of the patient, she was noted to be of poor build, very thin, with a history of rapidly increasing emaciation. Constipation had become a very troublesome symptom. Her large and overhanging forehead suggested a hydrocephalic condition. The abdomen was distended, with some rigidity of the parietes, but a distinct movable mass could be felt in the right iliac region, rather firm in consistence and somewhat tender to pressure. Her mental condition was evidently of a low type, and her general appearance suggested defective development.

Operation.—The abdomen was opened by a transverse incision just above the umbilicus. A freely movable tumour was at once encountered, which could be easily withdrawn from the abdominal cavity. It proved to be connected with the pylorus, and was associated with a greatly dilated stomach. In the belief that it was a growth, the pylorus with about half the stomach was excised, and the continuity of the canal re-established by performing a "no-loop" posterior gastro-jejunostomy. The patient did well for four days, taking nourishment without any discomfort: but on the evening of the fourth day the temperature suddenly rose, double pneumonia developed, and death ensued in the course of a few days.

The specimen was submitted to the Infirmary Pathologist, Dr. John Anderson, who reported as follows:—"The stomach wall shows a general hypertrophy, with marked thickening in places of the mucous coat, and a number of small subcutaneous hæmorrhages. There is stenosis of the pylorus, with marked hypertrophy of the muscular ring. There is no evidence of tumour tissue suggestive of new growth, and no recent or healed indications of ulceration observed. Microscopical examination shows a regular character of tubular glands which pass deeply. There is new-formed connective tissues around the glands. The muscular tissue is hypertrophied, and shows a diffuse interstitial fibrosis."

This is the second case of the kind that I have encountered. The first is recorded in my book, *Practice and Problem in Abdominal Surgery* (p. 147); and a coloured illustration of the part of the stomach removed showing the hypertrophy of the parts forms the frontispiece. It is many years since Maier in *Virchow's Archiv* (Band CII, H. 143), drew attention to this particular form of pyloric obstruction, which from its peculiar shape he termed "Trichterformig." In operating, the difficulty is to distinguish the hard mass from a tumour, so much does it resemble a growth invading the pyloric extremity of the stomach. It was acting on this belief that, in both cases, I freely excised the part; whereas a simple gastro-jejunostomy would have amply sufficed to remedy the condition.

IV.—CARD SPECIMENS.

Records, with casts, x-ray photographs, &c., of (1) a case of acromegaly; (2) a case of Charcot's joint in a tabetic patient, after ten years, by Dr. J. M. Cowan (for himself) and Drs. A. J. Ballantyne, A. W. Harrington, W. H. Manson, J. R. Riddell, and J. K. Rennie.

V.—Dr. G. Herbert Clark showed the two patients referred to in his communication of 19th March.

Meeting VIII.—7th May, 1920.

The President, Mr. A. Ernest Maylard, *in the Chair.*

I.—MULTIPLE SARCOMATOUS GROWTHS OF THE SMALL INTESTINE.

By Dr. J. Mill Renton.

Man, aged 54 years, who gave a history of pain in his left iliac region, nausea and vomiting, and increasing weakness of about two months' duration.

Patient looked emaciated and ill. There was a slight fullness of his abdomen, and once or twice a suggestion of visible peristalsis was observed. No tumour could be felt, and sigmoidoscopic examination was negative. His symptoms thus pointed to chronic intestinal obstruction.

His abdomen was opened through the left rectus. Nothing abnormal was discovered in the rectum, sigmoid, or the large intestine. The stomach was normal, but an annular growth was discovered in the jejunum causing partial obstruction. The glands in the mesentery opposite this were enlarged. On examination of the bowel above and below a number of similar tumours of lesser degree were found, and these extended at increasing intervals nearly to the duodenum and lower ileum respectively. The condition looked most like a tuberculous lesion. The tumour in the jejunum, which was causing partial obstruction, was resected and an end-to-end anastomosis performed in the hope that the other lesions might improve after the laparotomy. The patient did well for three weeks, but then began to have attacks of vomiting and got rapidly weaker, and died a fortnight later.

The specimen removed looked extraordinarily like a tuberculous condition, but microscopical examination showed it to be a sarcoma.

II.—HYDATID DISEASE OF THE LIVER SIMULATING CARCINOMA.

By Dr. J. Mill Renton.

The patient was a married woman, aged 45 years, whom I saw at the Western Infirmary in 1915. She gave a four to five months' history of pain and discomfort in the gall-bladder region, slight jaundice, loss of flesh, and increasing weakness.

At the time of examination no jaundice was present, but she looked as if she had lost weight considerably. Nothing definite was found on examination of the abdomen, except some tenderness in the right hypochondrium.

An exploratory laparotomy was done, and marked adhesions were found about the gall-bladder, with enlargement and hardness of the head of the pancreas. No stones were discovered. The liver was not enlarged, but on its upper surface there were several small white nodules sharply defined and hard to the touch. The condition was considered to be carcinomatous, and the abdomen was closed.

The patient recovered from the operation and went home.

I heard nothing further of her until the beginning of this year, when I heard from her doctor that, contrary to our expectations, she had made a complete recovery. She had been in perfect health until January of this year, when she began to have attacks of excruciating pain in the gall-bladder region. These attacks resembled definite gall-stone colic, but were unassociated with jaundice.

The abdomen was again opened in the hope of finding a stone, or, at anyrate, something to explain her symptoms. There were some adhesions about the gall-bladder, but no stones were found. The liver was not enlarged, but on drawing it downwards several small white nodules were seen on the anterior and upper surface of the right lobe, similar to those seen at the first operation. The right lobe felt somewhat cystic, but on exploring it with a needle no fluid was obtained. One of the nodules was then cut out, and in doing this a cavity was opened into. As this could not be satisfactorily drained from the abdomen, one of the lower ribs was removed, the pleura opened, and the diaphragm stitched to the parietal pleura, thus shutting off the pleural cavity. The diaphragm was then incised and the liver freely opened. A large amount of greenish-yellow pultaceous material, which was distinctly membranous in parts, was evacuated, and, finally, a cavity about the size of a cricket-ball was left. This was packed with gauze, and the abdominal wound closed completely. The patient made a good recovery, but a large amount of bile drained from the cavity. This is gradually diminishing, but at the present time—two months after operation—there is still some bile coming away. Apart from this the patient is very well.

Dr. G. Haswell Wilson described the pathological findings in these cases, and showed the following specimen and sections illustrating the first case:—

Portion of small intestine showing sarcomatous stricture.

Portion of small intestine with early sarcomatous ulceration.

Mesenteric lymphatic gland infiltrated by tumour; necrosis in the central part.

III.—COLLOIDAL GOLD REACTION OF THE CEREBRO-SPINAL FLUID.

By Dr. Douglas K. Adams.

Dr. Adams made a short communication on the colloidal gold reaction of the cerebro-spinal fluid in cases of organic disease of the central nervous system, and described the procedure and methods of application.

1. Historical note on Lange's colloidal gold test.
2. Method of preparation of colloidal gold.
3. Technique of test.
4. Demonstration of paretic, luetic, and meningitic reactions.

Preliminary note on fluids I have examined. In 25 cases of insular sclerosis the cerebro-spinal fluid was examined. All gave luetic reactions. In 5 cases the Wassermann reaction was positive, in 20 it was negative.

In 13 cases of tabes, general paralysis, and cerebro-spinal syphilis, luetic or tabetic results were obtained. In all the 13 cases the Wassermann reaction of the cerebro-spinal fluid was positive.

In 1 case of cerebral abscess a meningitic result was obtained.

In 1 case of cerebellar neoplasm a faint reaction in tubes 1 to 4 was noted.

In 1 case of neoplasm of the calloso-marginal gyrus a negative result was obtained.

In 6 cases of functional nervous disease completely negative results were obtained.

In 1 case of (?) amyotrophic lateral sclerosis a strong paretic curve developed. The Wassermann reaction was positive.

In 4 cases of meningitis the typical meningitic zone phenomenon was noted.

In 2 cases of recovered hemiplegia with a negative Wassermann reaction a luetic curve was noted. One of these cases was of interest in that there was a definite history of specific infection prior to the onset of the hemiplegia in 1915. The patient had received intensive anti-specific treatment and was apparently cured. The Wassermann reaction of the blood and cerebro-spinal fluid was negative. Ross Jones and Nouncapelt tests were negative, the cell count was 4 per c.mm., while there was still a faint luetic curve shown in the colloidal gold reaction.

IV.—CARD SPECIMENS.

By Dr. G. Haswell Wilson.

Congenital hour-glass constriction of stomach. This lesion was associated with redundancy and dilatation of the large intestine.

Congenital hypertrophic stenosis of the pylorus.

Congenital stenosis of duodenum. The first part of the duodenum is dilated, and contrasts markedly with the undilated bowel distal to the stricture. Gastro-enterostomy was performed. This infant was a "Mongol," and there was patency of the ductus arteriosus and foramen ovale.

Malformation of œsophagus. The upper end terminates as a blind pouch behind the bifurcation of the trachea. A probe passed up from the stomach enters the inferior aspect of the bifurcation of the trachea. (The two smaller probes are in the bronchi.)

Aplasia of cæcum and large intestine. The dilated tube in the centre is small intestine, and the cord-like structure is the large intestine. A fine probe could be passed through the lumen.

Congenital narrowing of large intestine with dilatations in the cæcum, transverse colon, and sigmoid.

REVIEWS.

A Manual of Midwifery. By THOMAS WATTS EDEN, M.D.Edin., F.R.C.P.Lond. Fifth Edition. London: J. & A. Churchill. 1919. (24s. net.)

DR. EDEN'S valuable text-book has now reached the fifth edition. No very great changes have been made in this edition except in the sections dealing with the management of labour and the care of the infant, which have been rewritten and new matter added. The management of labour is dealt with in a very able and practical manner, and the rules laid down are such as can and ought to be carried out in every case. The section on the toxæmias of pregnancy is well up to date, but there is one condition he does not deal with as it deserves, namely, peripheral neuritis. In its severe form it is rare, but the milder manifestations are not so very uncommon. It is curious that very few midwifery books do more than mention this condition, and yet it is a terrible complication when it assumes a severe form. Epilepsy and the *status epilepticus* are merely mentioned in the differential diagnosis of eclampsia. These conditions are surely worthy of more attention. In the delivery of breech cases the author recommends the use of the blunt hook. We consider that the blunt hook should never be used on a live child. We agree generally with the advice on the treatment of eclampsia, and are glad to see that the author objects to *accouchement forcé*. The book is very fully illustrated. We have confidence in strongly recommending it.

The Link between the Practitioner and the Laboratory. By CAVENDISH FLETCHER, M.B., B.S., M.R.C.S., L.R.C.P., and HUGH McLEAN, B.A., B.C., D.P.H., M.R.C.S., L.R.C.P. London: H. K. Lewis & Co., Limited. 1920. (4s. 6d. net.)

THE objects of this small book are to inform the practitioner in what diseases the pathologist can be of assistance to him, and also the material he should obtain in those diseases, and when and how to send it to the laboratory. The minimum times which must elapse before a report can be expected are also given, as well as a short account of vaccine and serum therapy. The authors have thoroughly succeeded in their objects. The volume contains in concise form all the necessary information, which is up to date. It will be useful to many practitioners.

Immunity in Health. By KENELM H. DIGBY, M.B., B.S., F.R.C.S. London: Henry Frowde and Hodder & Stoughton. 1919. (8s. 6d. net.)

THE thesis of this book is that "the subepithelial collections of lymphoid tissue play an important function in immunising the body against pathogenic bacteria in proximity to the tissues." These collections of tissue include tonsils, adenoids, the vermiform appendix, and the solitary and aggregated nodules. The author develops his argument with skill, and gives a very fair and unbiassed summary of the evidence for and against his hypothesis. As he frankly confesses, the want of direct experimental evidence is the weak point in the case. The book is exceedingly interesting, and will amply repay perusal. It is well produced, but shows a want of care in proof-reading, as evidenced by "fibosis," "salvia," "actinimycosis," &c.

The Year Book of the Scientific and Learned Societies of Great Britain and Ireland. Thirty-sixth Annual Issue. London: Charles Griffin & Co., Limited. 1920.

THIS annual volume contains a record of the work done in science, literature, and art during the previous year, and besides making mention of many of the papers read at the various societies throughout the kingdom, gives particulars of the chief office-bearers. It will fill a useful place in any library of reference.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

EDITED BY GEORGE MACINTYRE.

MEDICINE.

Aneurysm of Right Pulmonary Artery.—In the *Journal of the American Medical Association*, 26th June, 1920, H. C. Marble and P. D. White record a case of traumatic aneurysm of the right pulmonary artery. The patient lived for five months after receiving the wound. The result was confirmed by *post-mortem* examination. Clinically, there was dulness at the right base with bronchial breathing and increased vocal fremitus. The heart was in normal position : all sounds were normal except for a murmur along the sternum—loudest at the lower end, continuous through systole and diastole, and much accentuated with systole. There was no thrill. The murmur was much more loudly heard at the back than at the front of the chest. *Post-mortem*, an aneurysm of medium orange size was found in the right pulmonary artery. Only 56 cases of aneurysm of the pulmonary artery have been reported in the literature, and of these, only 1 was traumatic in origin.—DOUGLAS K. ADAMS.

Basal Metabolism.—In the *Journal of the American Medical Association* (vol. lxxv, No. 8), 21st August, 1920, Snell, Ford, and Rowntree record their results in observations on the basal metabolism in various pathological conditions. The two extraneous factors most commonly and markedly affecting metabolic rates are exercise and food. For comparative purposes conditions are established under which these factors are reduced to a minimum. The resulting rate, designated the "basal metabolic rate," represents metabolism when the body is at complete rest and when the digestive processes are at their normal daily minimum.

Under the conditions indicated, the basal metabolic rate is found to bear a constant relation to the surface area. In determining the basal metabolic rate the gasometer method was employed. The air was collected by a modified Tissots' spirometer and analysed by Haldane's apparatus.

The authors state that this method gives constant and reliable results, and are of opinion that it gives a reliable and practical clinical method of estimating basal metabolic rate. The patient is confined to bed and undergoes a fourteen hours' fast. He is brought to the laboratory on a barrow. Observations were made on 350 persons. The variation in health was found to be within narrow limits.

Basal metabolism in disease.—Special attention was directed to the endocrine system. Hyperthyroidism, febrile diseases, and leukæmias exhibited the highest rates; hypothyroidism, polyglandular deficiencies, and asthenias the lowest.

Hypothyroidism.—Thirteen cases of cretinism and myxœdema were investigated. The metabolic rate varied from − 7 to − 25. Absolute parallelism between clinical manifestation and metabolic rate was not established.

Hyperthyroidism.—(*a*) *Exophthalmic goitre:* Thirteen cases were investigated. Metabolic rate + 20 to + 82. (*b*) *Thyrotoxic adenoma:* Eleven cases. Metabolic rate + 10 to + 53.

In 7 cases of pituitary disease the results were variable.

In conclusion, the authors claim, in addition, that the estimation of the basal metabolic rate is of value in revealing the effect of drugs on metabolism.

—DOUGLAS K. ADAMS.

SURGERY.

Renal Calculus with Negative X-Ray Findings. By A. Hyman, New York (*Boston Medical and Surgical Journal*, 1920).—Dr. Hyman has recently had five cases in his hospital where definite negative *x*-ray reports were given in cases where calculi in genito-urinary tract were shown to be present by operation or *post-mortem* examination. The calculi were chiefly composed of ammonium urate. But he concludes that the chemical composition of the calculi has not everything on its side to account for this phenomenon. For, following Freyer, he had the kidneys removed *post-mortem*, *x*-rayed with the stones *in situ*, and distinct shadows were obtained. Freyer had a patient with a palpable kidney-mass which gave a negative result at *x*-ray examination. At operation a large phosphatic calculus was removed. The stone was then placed under opposite healthy loin and a radiograph taken. This showed the calculus quite plainly. Freyer, from this case as well as others, concluded that many stones were translucent to *x*-rays when covered by an inflamed kidney, or by condensed fat, or when surrounded by pus. Hyman, in dubious cases, passes a wax-tipped ureteral bougie. Scratches on the wax demonstrate the presence of a stone, he holds.—JOHN MACINTYRE.

Books, Pamphlets, &c., Received.

Common Infections of the Kidneys, with the Colon Bacillus and Allied Bacteria, based on a Course of Lectures delivered at the London Hospital. By Frank Kidd, M.B., B.C.Cantab., F.R.C.S.Eng. With an Additional Lecture on the Bacteriology of the Urine, by Dr. Philip Panton. London: Henry Frowde and Hodder & Stoughton. 1920. (18s. net.)

Military Sanitation: A Handbook for Soldiers, by Colonel Robert J. Blackham, C.B., C.M.G., C.I.E., D.S.O., M.D. Third edition, revised, illustrated, and largely rewritten. London: John Bale, Sons & Danielsson, Limited. (10s. net.)

The Shibboleths of Tuberculosis, by Marcus Paterson, M.D. London: John Murray. 1920. (10s. 6d. net.)

Chirurgie Réparatrice et Orthopédique, publié sous la direction de MM. E. Jeanbrau, P. Nové-Josserand, L. Ombrédanne, et P. Desfosses, Secrétaire de la Rédaction. Tomes I et II. Paris: Masson et Cie. 1920. (80 fr. net.)

Adenoids and Enlarged Tonsils Curable without Operation, by John Kynaston, Lt.-Colonel. R.A.M.C. (R.P.). London: The St. Catherine Press. 1920. (1s. net.)

Electro-Therapy: Its Rationale and Indications, by J. Curtis Webb. M.A., M.B., B.C. With 6 diagrams. London: J. & A. Churchill. 1920. (5s. net.)

MEDICAL DIARY.

1920.

Nov. 1—Royal Faculty of Physicians and Surgeons, Faculty Hall, 4 p.m.—Annual Business Meeting and Election of Office-bearers.

,, 5—Royal Medico-Chirurgical Society, Faculty Hall, 8-30 p.m.—"Epidemic encephalitis in childhood," by Dr. Leonard Findlay; "The cerebro-spinal fluid in epidemic encephalitis," by Miss Cecilia Shiskin, B.A., M.B., Ch.B.

,, 11—Southern Medical Society, Medical Club, Carlton Place, 8-30 p.m.

,, 16—Odontological Society, Dental Hospital, Glasgow, 8 p.m.—"General surgery in the dental curriculum," by Mr. Donald Duff, F.R.C.S.Ed.

,, 17—Post-Graduate Medical Association, Royal Hospital for Sick Children, 4-15 p.m.—Clinical Demonstration by Dr. Leonard Findlay.

,, 17 Eastern Medical Society, Sydney Place Church Hall, Duke Street, at 8-30 p.m.—Presidential address by Dr. Thomas Russell.

,, 18—Northern Medical Society, Royal Philosophical Society's Rooms, 207 Bath Street, 8-30 p.m.—Discussion on "Visceroptosis," to be opened by Dr. John Ritchie.

,, 19—Royal Medico-Chirurgical Society, Faculty Hall, 8-30 p.m.

,, 20—Odontological Society Annual Dinner, Grosvenor Restaurant, Gordon Street, 7 p.m.

,, 24—Post-Graduate Medical Association, Royal Maternity and Women's Hospital, 4-15 p.m.—Clinical Demonstration by Mr. J. H. Martin.

,, 25—Southern Medical Society, Medical Club, Carlton Place, 8-30 p.m.

Dec. 1—Post-Graduate Medical Association, Royal Infirmary, 4-15 p.m.—Clinical Demonstration by Mr. Henry Rutherfurd.

,, 3—Royal Medico-Chirurgical Society, Faculty Hall, 8-30 p.m.—Discussion on "The treatment of gastric and duodenal ulcer," to be opened by Professor R. Stockman, Mr. J. H. Nicoll, and Dr. R. O. Adamson.

,, 6—Royal Faculty of Physicians and Surgeons, Faculty Hall, 4 p.m.—Monthly Meeting.

,, 8—Post-Graduate Medical Association, Victoria Infirmary, 4-15 p.m.—Clinical Demonstration by Dr. Ivy McKenzie.

The Editors will be glad of the assistance of Secretaries of Societies in keeping this Diary complete and up to date.

GLASGOW.—METEOROLOGICAL AND VITAL STATISTICS FOR THE FOUR WEEKS ENDED 23RD OCTOBER, 1920

	Week ending			
	Oct. 2.	Oct. 9.	Oct. 16.	Oct. 23.
Mean temperature, . .	57·2°	53·9°	51·7°	49·2°
Amount of rainfall, . ins.	0·09	1·38	0·11	0·18
Deaths (corrected), . .	267	278	281	270
Death-rates, ...	12·5	13·0	13·2	12·7
Zymotic death-rates, . .	1·0	0·9	0·7	0·7
Pulmonary death-rates, .	2·7	2·3	3·2	3·1
Deaths—				
Under 1 year, . . .	55	85	75	65
60 years and upwards, .	69	71	75	74
Deaths from—				
Small-pox, . . .	2	1	1	...
Measles, ...	2	...	1	1
Scarlet fever, . . .	1	1	...	...
Diphtheria, . . .	7	3	1	3
Whooping-cough, . .	1	2	2	...
Enteric fever, . . .	...	3	1	1
Typhus, ...	...	...	...	...
Cerebro-spinal fever, . .	2	...	1	1
Diarrhœa (under 2 years of age),	10	11	11	9
Bronchitis, pneumonia, and pleurisy, . . .	39	49	58	48
Cases reported—				
Small-pox, ...	3	6	2	6
Cerebro-spinal meningitis, .	3	...	2	1
Diphtheria and membranous croup, ...	36	45	43	41
Erysipelas, . . .	21	22	23	22
Scarlet fever, . . .	94	84	101	67
Typhus fever, . . .	...	...	...	...
Enteric fever, . . .	7	11	5	3
Phthisis, ...	45	50	45	47
Puerperal fever, . .	10	1	6	2
Measles,*	24	30	20	26
Ophthalmia neonatorum, .	9	12	13	11

* Measles not notifiable.

Sanitary Chambers,
Glasgow, 29th October, 1920.

THE

GLASGOW MEDICAL JOURNAL.

No. VI. December, 1920.

ORIGINAL ARTICLES.

PHYSIOLOGY: THE INSTITUTES OF MEDICINE.*

By Professor D. NOËL PATON, M.D., LL.D., F.R.S.

You have now reached the second stage of your medical curriculum—the stage sometimes called the *Intermediate Scientific*—one which would be better called the *Introductory Professional*, for in it you enter upon the study of the structure and mode of action of the human body, in maintaining the welfare and attempting to heal the ills of which you will be engaged throughout your lives.

Your first year of study has simply been a preparation for this.

The structure of man can be understood only in the light of the structure of lower animals. The physiology of man is simply the application of physics and chemistry to the human body in action, and the activities as well as the structure of the body are to be explained in the light of your knowledge of the activities of simpler organism.

You are now starting to apply to your life's work, what you have learned of the fundamental sciences, and your progress will depend upon your preliminary knowledge and training.

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* An introductory lecture delivered to the Class of Physiology in the University of Glasgow, 21st April, 1920.

Distinctly understand it is not our business to teach you these elementary sciences, and we do not intend to do so.

The object of the First Professional Examination is to ensure that only those with an adequate knowledge are allowed to proceed to their more professional studies. If you, with inadequate knowledge, have succeeded in eluding the vigilance of the examiners, or if you have forgotten what you learned, you will suffer for it now. You will fail to master physiology and you will be eliminated at the next test, which is applied to find if you are fit to proceed to your purely professional work. I mean the Second Professional Examination.

It is as well that you should learn at once that throughout your lives you will have to pay heavily for every bit of carelessness or negligence. I know that this statement is a truism, but all the same few young people recognise it. I know that bitter personal experience alone will teach you this lesson.

One reason for your failure to study these preliminary subjects with any enthusiasm has been because you have not understood their bearing upon your professional work, because you have not understood that they are the foundation of all your future work.

In order that you may not have this excuse to offer for a failure to devote your energies to the study of physiology, I am going to try to show you the bearing of the subject upon practical medicine, to show you why the subject is worthy of your most serious attention.

I.—WHY PHYSIOLOGY MUST BE STUDIED.

If you were asked the object of medical practice, you would probably say that it is to cure your patients. As a matter of fact it is becoming more and more a question of keeping well those under your charge. The whole organisation of the Ministry of Health has as its purpose the maintenance of the well-being of the community, and the normal physiological condition of its constituent individuals—the application of our knowledge of physiology to mankind.

But, accepting the more limited definition, you will at once recognise that you can do nothing to cure your patient until you have found out, first what is wrong, and second why it is wrong —until you have made a diagnosis. Unless you have done this you had better leave alone any attempt to cure your patient. It is safer to let the "vis medicatrix naturæ" have a chance.

Now, to make a diagnosis requires a special knowledge and a special training.

A. THE KNOWLEDGE REQUIRED FOR DIAGNOSIS.

I. *In order to find out what is wrong,*
You must know :—

1. How to investigate the condition of the various organs of the body to find if they are working right: and if not working right, in what ways their activities are modified.
2. You must know what is the normal condition of the various organs before you can say that they are not acting properly.

II. *In order to find out why any organ is not acting properly,*
You must know :—

1. How to investigate the various factors disturbing the activity of the organs.
2. What these factors are.

B. THE TRAINING REQUIRED FOR DIAGNOSIS.

(1) The condition of your patient has to be learned by observation through your various senses—sight, hearing, touch, &c.— and these senses all have to be trained. How inadequately they are trained in you at present you will learn when you begin Clinical Medicine and first try to distinguish changes in the sounds of a patient's heart or in the breath sounds.

(2) But not only must the organs of sense be trained, the mind must be also educated to observe honestly. It is extraordinary how difficult this is, how apt we are to approach whatever we have to study with preconceived ideas, how we tend to see in a thing only what we bring to it in our minds, and not

what is actually there. This is perhaps the most fertile cause of faulty diagnosis, and it is one you must carefully train your minds to avoid.

(3) The condition of many of your patients' organs cannot be directly observed; it has to be inferred from indirect observation. You cannot see your patient's heart; you have to infer its condition from the observation of certain signs, which you must observe honestly and without preconceived ideas, and from these observations you must by a process of reasoning draw your conclusions—make your diagnosis. This means that your power of reasoning must be trained.

Of course, if the observations are faulty, even the most acute reasoning will lead to fallacies.

Many of you have never formulated a logical conclusion in your lives; many people live and die without having done so. But no doctor can afford to undertake practice without the capacity to weigh evidence and to form a definite logical conclusion upon it. In this lawyers are generally better trained than doctors.

I have given the heart as an illustration of the impossibility of direct *observation* of an internal organ and of the necessity of careful *observation* of the indirect signs of its disturbed action, and of the necessity of *reasoning* upon these in order to arrive at a diagnosis; and the same applies to all the internal organs—stomach, intestine, liver, kidneys, brain, spinal cord, &c. The condition of each one has to be arrived at by the same processes.

I hope that you now understand what is required for medical practice. How does physiology prepare you for your life's work?

The scope of physiology is the study of the activities of all living things, and its great end is to answer the question—"What is life?"

But, in the short time at your disposal, it is impossible to study more than that part of the science which deals with the human body in action. This is the part which is of importance to medical students—this is the part of the science which used to be called in the Scottish Universities the Institutes of Medicine, because upon it all knowledge of medicine is based.

What, then, does this part of physiology involve? It involves the study:

1. Of how to investigate the activities of the various structures building up the body.
2. Of what the normal healthy action of these structures is.
3. Of how to investigate the factors modifying the activity of these structures.
4. Of what these factors are.

Compare this with the *knowledge* required for coming to a diagnosis, and the direct bearing of the study of physiology upon medical practice will be manifest to you without further elaboration by me.

The study of physiology not only aims at giving you this knowledge, but it also aims at giving you the necessary *training* in observation and in reasoning.

In your study of the minute structure of the body and of the body in action you will have ample opportunity of training your powers of unprejudiced observation, while, more especially in your experimental work, you will constantly have to exercise your powers of reasoning in coming to conclusions upon your observations.

Thus you see that your study of Physiology, of the Institutes of Medicine, is a direct preparation for your work as practitioners of medicine.

The object of the Second Professional Examination is to determine whether you have received this training, whether you are fit to go on to the study of medicine. If you have studied physiology with this end in view, if you have prepared yourselves in the way I have indicated, you need have no fear, unless, indeed, you are mentally deficient. But if you attempt simply to learn the subject for examination purposes, you will find that the examiners are well able to detect the fraud, and that the barrier will not be passed.

II.—How to Study Physiology.

I. *Practical Work.*

First, always keep clearly before you why you are studying the subject. If you do so you will at once recognise that, if it is to be of any use, it can be learned only by practical work. How can you learn to make the necessary observations, to determine the condition of action of the structure of the body, except by practical work? How can you train your powers of observation and reasoning except by practical work?

What good is it to you to be able to talk about the pulse, the heart sounds, the process of gastric digestion, or the composition of the urine? None whatever. You must have a practical knowledge of these things, and the sooner you recognise that practical work is the important part of the course of Physiology, the better for you. In our practical classes a large proportion of the work is done upon the human subject, and the use of the isolated organs of the frog is reduced to a minimum. The chance of doing this work is offered only once, and if you miss a practical class you may miss the acquisition of some all-important part of the work you have to master.

In this department the preponderant importance of practical work is emphasised by its being taken before lectures. You must learn from the thing itself—all a lecture can do is to extend the actual knowledge so acquired. If the practical work followed the lecture you would be bound to approach it with preconceived ideas, and thus one of its main purposes, the training of your faculty of honest unprejudiced observation and your powers of reasoning from your observation, would be defeated.

This approaching your practical work with preconceived ideas is what you seem to have done in the past, so that when what you see appears different to what you have been told to expect, you misdoubt your own observations and let your imagination loose to convince you that it is what you think it ought to be. I have seen a student imagine he saw in a section of the liver all the structures described in the kidney!

Again, only by requiring you, more especially in the Experimental Class, to draw your conclusions from what you have seen and not from what you have been taught to expect from lectures, can your faculty of reasoning be trained.

Further, you must train your minds to work in an orderly manner. In approaching any problem:

1. You must understand what you want to find out.

2. You must either devise a method for finding it out, or you must understand the method that is suggested to you for the purpose.
3. You must, in carrying out the method, observe and *record* the results with honesty and without preconceived ideas. In doing practical work never trust your memory even for a few minutes. *Record* immediately what happens. It is extraordinary how soon observations are forgotten, and how readily the imagination is allowed to construct a false picture.
4. From your observations you must formulate the logical conclusions, taking care not to allow preconceived ideas to dominate your judgment.

Remember that your records of practical work may be used in determining the result of the Professional Examination. Your Practical Class is in fact part of that Examination.

For each division of your practical work a Guide has been prepared, and you must learn to do your work under the direction of these books. In this way you will prepare yourselves for working under the guidance of books, as you will have to do when you are in practice.

In the General and Experimental Division of the Class you will frequently use methods to secure that the action of some organ or structure is recorded. When such records or tracings are obtained you must be able to read them, to interpret them, to understand what they mean. Unless you can do so, your work is of no avail. Yet many students seem to find this not the least difficult part of their experimental work.

In the Histology Division, sub-sections of the Class are formed in order that in learning the more difficult methods which you will have to use afterwards in medicine you may have the more direct supervision of your teacher. These are perhaps the most important part of the Division.

II. *Reading.*

After your practical work you are in a position to extend your knowledge by reading a text-book on the subject, just as afterwards, in your study of medicine, having seen and examined a case of some particular disease, you will read all you can upon it and similar diseases.

Many students go through a University Course without having learned to read a book, depending entirely upon lecture notes. But in practice it is to books you must turn as your guides—so learn to use them now.

III. *Demonstrations.*

It is not possible for you to do all the experimental work upon which knowledge of physiology is based. Your time is too limited, many of the experiments are too complicated and many cannot be done under the law of the land.

Hence a series of demonstrations will be given. They are part of the practical work, and you must not fail to attend them and to record them, making drawings of the apparatus used.

These demonstrations also afford me the opportunity of bringing before you patients suffering from different diseases, and of showing you how your knowledge of physiology may be directly applied in coming to a diagnosis.

IV. *Lectures.*

You see that I place Lectures fourth in the order of importance. Without practical work, they, like text-books, are useless. But they have certain uses which it is well that you should recognise.

These uses are:

1. To enlarge the knowledge gained by practical work, demonstrations and reading.
2. To give further explanations of your practical work.
3. To bring your knowledge of physiology up to date. Every book on physiology is old as soon as it is published, so rapidly is the science growing, and hence the necessity of a lecturer to tell you of what is being discovered.

I know perfectly well that in trying to explain physiology to you by lectures we shall not succeed in so presenting it that all of you will understand it.

Some get a better idea of a thing from one point of view, some from another. We cannot always be sure that the way in which we are presenting the subject is the best way for every one of you.

The remedy rests with yourselves. If you don't understand, come and ask. We are not here to fire lectures at your heads, but to help you to learn physiology. But if you are too indifferent or too timid to help yourselves, we can do nothing for you.

There is a Persian proverb which you would do well to lay to heart—

> There are those who know not and know not that they know not,
> Fools, shun them.
>
> There are those who know not and know that they know not,
> Students, help them.
>
> There are those who know and know not that they know,
> Poets, honour them.
>
> There are those who know and know that they know,
> Masters, follow them.

Try to attain to the second rank at least and not to fall into the first!

V. *Class Examinations.*

Are these of any use? I think they serve a triple purpose—

1. They enable you to test your knowledge, to see how far you are actually mastering the subject.
2. They give your teachers an opportunity of finding out how far they are succeeding in helping you to learn.
3. They give you practice for the really serious test of the Second Professional Examination.

I do not insult you by supposing that you regard them as a means of securing medals and certificates. I take it that you have put aside such childish things, and that you are working to train yourselves for your life's work—the battle for health against disease.

A FEW DIAGNOSIC HINTS.*

BY ROBERT FULLERTON, M.D.,
Honorary Consulting Surgeon for Diseases of Throat and Nose,
Glasgow Royal Infirmary.

SANCHO PANZA gave utterance to several wise thoughts, and one most useful to the diagnostician is—"Where one least expects it, there starts the hare." The value of the mental attitude implied is clear, embodying as it does a warning against being caught off our guard, or rushing to conclusions; and doubtless the experience of the author of *Don Quixote* when a prisoner in the hands of the Moors, impressed him with the importance of being wary.

Promptitude and thoroughness are qualities which go far towards success in the practice of our profession, but before these qualities can be brought effectively into play, an accurate diagnosis must be arrived at. A correct diagnosis is all-important, and, if mistakes are to be avoided, care and circumspection must be exercised, and nothing taken for granted.

Imbued with the spirit of Sancho's aphorism, I purpose bringing to your notice a few simple diagnostic points in connection with the branch of medicine in which I am chiefly interested, the significance of which might either be overlooked, or misinterpreted.

First, taking the ear into consideration, a good example of the possibility of a wrong conclusion is presented by the conditions met with in furunculosis of the external auditory meatus. Here, at an early stage, when there is swelling of the meatal wall, and pain is felt in front of the tragus, the diagnosis is easy. External manifestations of identical pathological origin are not always alike, but vary according to the period of their development. At a later stage, in the case before us, the picture is very different. Pain is no longer elicited on pressure, the swelling which formerly occluded the external meatus has subsided: in other words, the furuncle has burst, and its evacuated contents fill the passage with purulent material. We are now confronted with a condition that at first sight might easily be mistaken for acute middle ear suppuration. Again, should the pus from the furuncle, instead of pointing in the meatus, burrow backwards in the soft tissues behind the auricle, we meet with entirely different features from an identical primary cause. The auricle is tilted forward, there is redness, swelling, and pain on pressure over the mastoid region, and regarded casually, a diagnosis of mastoiditis might readily be made. In such cases mistakes are avoided by giving due consideration to the history and to the condition of the power of hearing, and, if possible, by inspecting the tympanic membrane.

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* Abridged address as Honorary President of the Greenock Faculty of Medicine, 12th October, 1920.

The frequency with which coughing can be induced by irritating the external auditory meatus, is another point in regard to the ear which should not be forgotten. I am convinced that coughing can be called forth by this means in at least 5 per cent of the cases examined. When we have, therefore, to deal with an obscure and persistent cough, this possible cause should not be overlooked, by neglecting to examine the external auditory passages, where we may find a foreign body, hardened cerumen, or an eczematous irritation.

Again, I have met with a furuncular infection of the nostril, which, with little apparent alteration of the tissues at the seat of origin, gave rise to marked swelling and tenderness of the face over the antrum of Highmore: a condition which may be viewed as analagous to that of furunculosis of the ear, simulating mastoid abscess. But pain and swelling of the face over the antrum of Highmore, although met in some cases of acute maxillary sinusitis, are seldom seen in the chronic form, and, when present, are generally the result of tertiary specific mischief, new growths, or periostitis.

In the nose, however, and especially in children, interference with nasal respiration, and the results arising therefrom, overshadow all other symptoms. From the frequency with which adenoids are found in such cases, we are inclined to attribute all nasal obstructions to their presence. Adenoids interfere with nasal respiration chiefly by occlusion of the naso-pharynx, and by inducing congestion of the lining membrane of the nose: but it is well to bear in mind that causes other than adenoids can, and occasionally do, induce mouth breathing. Such other causes may, or may not, be associated with adenoids, but so long as they contribute to the obstruction, the removal of the adenoids alone will not yield a satisfactory result.

I shall refer to one or two of these causes. Zuckerkandl, when Professor of Anatomy at Prague, made his classic investigation into the structures of the nose, and in his book dealing with this states, that up to the age of 9 years, the septum nasi is found to be undeviated. His material, however, was obtained from the cadaver, and his conclusions in this respect are not in keeping with what is met with in practice. It is not unusual to find nasal obstruction in quite young children, due to a deflected or deformed septum. Again, Mackenzie, in his book on *Throat and Nose,* states that he never met with a case of nasal polypus in males under 17 years of age, and in females under 16 years, adding that although much younger patients than these will be found in medical literature, he believes that in nearly all of them the growths were malignant or fibrous. One of the largest polyps I have removed from the nose was taken from the left passage of a boy of 9 years. Attached by a slender pedicle, it formed a cast of its bed, being flattened as a whole, but expanded in front where it lodged in the vestibule, and to a much greater extent posteriorly, where it largely filled the post-nasal space. I have repeatedly met with ordinary mucous polyps of the nose in children under 12 years of age.

It goes without saying that difficulty in nasal respiration apart from adenoids, may be due to chronic hypertrophic rhinitis. Here, it is more or less intermittent, being influenced by the position of the body and state of the weather. Nasal obstruction may be due to a foreign body, and I have had such cases referred to me for operation, under the impression that adenoids were the cause of the symptoms. Children are prone to push into their nostrils articles such as beads, buttons, beans, &c., and it is astonishing how long they may remain in the nose without their presence being detected. In children, especially, we should suspect the presence of a foreign body in the nose, when we meet with unilateral obstruction, accompanied by a muco-purulent discharge that is often tinged with blood. As an example of the length of time a foreign body may be tolerated in the nose, the following case may be cited. The subject, twenty-five years before being seen by me, had fallen down a shaft into water when engaged in pit-sinking. The fall had not seriously injured him, but for some time after he had occasional attacks of giddiness. A few years later he became conscious of obstruction of his left nasal passage, accompanied by a disagreeable discharge, and an unsuccessful attempt was made to relieve him. Following this, for over twenty years he tolerated all the discomfort incident to the condition without seeking further treatment, and was only constrained to do so by the onset of severe pain in the frontal region. The cause of obstruction was found to be a triangular piece of shale, which doubtless had been forced into his nose when he fell down the shaft. With its removal the frontal pain disappeared; it had formed a bed for itself between the lower turbinal and the triangular cartilage, and singularly enough had not ulcerated through the septum.

As further possible causes of mouth-breathing, I may mention abscess of the septum, post-pharyngeal abscess, and congenital atresia of the posterior nares, which last is, however, very rare.

I will now deal with a few points in connection with the larynx, which, differing in almost all respects from the ear and nose, must be viewed from another standpoint. It is only necessary to reflect for a moment on its inaccessibility, on its structure, functions, and anatomical relations, to recognise how obscure, and complicated may be the origin of symptoms met with. Here a correct diagnosis is often of vital moment, and for the diagnosis to be reliable, a satisfactory view of the larynx must be obtained. The great importance of this has long been recognised, and especially through development in instruments employed in the direct method, we have now at our disposal fairly satisfactory means for examining, and treating the larynx. Apart from simple catarrhal affections, this organ is not infrequently the seat of new growths, and tuberculous and syphilitic lesions, while the nerves supplying it are apt to be implicated in their course, by pathological processes affecting adjacent structures. Here, we have symptoms common to different causes, and the difficulties met with in the process of unravelling the cause, from the signs, and symptoms, may be such, that at certain stages of the disease it is impossible to arrive at a definite diagnosis. I shall not enter upon such issues, but will confine myself to a few points that may be found useful when confronted with laryngeal cases in general practice.

First, taking cough as a symptom: as the sound made in the act of coughing is produced in the larynx, one might expect it to accompany all pathological changes therein. This is not so, however, for cough is not a prominent symptom of the presence of such serious affections as new growths and specific lesions, and, although met with in all stages of tuberculous cases, it is difficult to say how often it may not be due to the pulmonary condition. The presence of a chronic cough should never be treated lightly, and should always be investigated. It is true that the low-pitched, barking cough, with or without loss of voice, met with in hysteria, however distressing or alarming to the relatives of the patient, need not be taken too seriously by the profession. But on the other hand, the imperfect, brassy cough, due to pressure of an aortic aneurism on the recurrent laryngeal nerve, is of grave portent. It is specially characteristic when paralysis of the vocal cord is established, and stridor is present. At an earlier stage the nature of this cough may be unsuspected, and I have met with such a case where, for months, the subject had been treated for laryngitis, and allowed to pursue his laborious calling. In this class of case a view of the larynx is often easily obtained, and the diagnosis presents no difficulty. Persistent cough in children is often connected with chronic tonsillitis, and in these cases I have generally found the tonsils to be little, if at all enlarged. A croupy cough with alteration of voice points strongly to papilloma of the larynx.

Although pain is more or less present in all acute inflammatory or ulcerative processes here, its presence alone has no special diagnostic significance, but when acutely felt during the act of swallowing, we should suspect involvement of the epiglottis, or of the structures at the posterior part of the larynx, as is so often seen in tuberculous cases. It may be noted that in syphilitic subjects a degree of anæsthesia is usually exhibited, whereas in the tuberculous the reverse is the case.

Perhaps the most important symptom in connection with the larynx is alteration of voice, arising from such conditions as tumefaction of the tissues, new growths, or interference with its innervation. Elucidation of all laryngeal symptoms calls for an examination of the parts, but an inspection is specially called for when the voice is affected. Putting aside acute affections which interfere with breathing, two serious conditions are met with, accompanied by loss of voice, to which I would draw attention, urgently calling as they do for early recognition. The first of these, paralysis of the "recurrent" due to aortic aneurysm, has already been referred to in considering the significance of cough as a symptom. The other is alteration of the voice by the presence of a malignant growth. Complete removal of such growths by a surgical operation offers the sufferer practically the only hope of recovery, and that this expectation is based on solid ground is shown by the number of cases in which great and sometimes permanent benefit has followed this course. A good result can only be expected, however, when the nature of the disease is recognised at an early stage. Too often an early diagnosis has not been made, and for this, apathy or procrastination on the part of the patient, is generally to blame. I wish, however, to emphasise our responsibility in regard to these cases, for there are few more distressing to witness than those where the patient is condemned to a painful and lingering end, from inoperable malignant disease of the larynx.

Specially directed to the younger members of the profession here, these remarks, as indicated, are of the nature of hints, and not intended in any sense to be exhaustive. Impressed by the awkwardness of a wrong diagnosis in unimportant cases, and the great moral responsibility associated with serious ones, I chose this subject as a warning against any tendency to be too precipitate or too complacent.

We are all liable to make mistakes, and in no circumstances can this be more excusable than in a busy practice where time is valuable, and much of the work routine; but in these days when hustle and superficiality are so rampant, we should aim none the less at thoroughness and conscientiousness.

SCURVY AMONG ADULTS IN GLASGOW.

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AND

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RENDLE SHORT, in the latest edition of *The New Physiology in Surgical and General Practice*, states that scurvy is but rarely found in adults in this country. This appears to be a common impression, but it does not agree with our experience. One of us (W.J.R.), in the course of his work in Govan Poorhouse during the past twenty-seven years, has frequently seen cases of scurvy admitted to Hospital, while the other (W.D.M.), as Assistant Medical Officer in Craiglockart Poorhouse, Edinburgh (1916-17), had under treatment six cases. During the year 1917 and in the present year the number of cases of scurvy has been very much greater than in any other year of our records.

During the year 1917 twenty cases of scurvy were treated in this Hospital, and in the present year, up till the time of writing, fourteen cases have been under observation. Several cases have also been admitted showing scorbutic symptoms added to those of other diseases.

As none of the cases was diagnosed "scurvy" previous to admission, it is possible that general practitioners are seeing cases in Glasgow without being aware of the condition. This has prompted us to draw attention to the condition, and to give a few notes regarding the symptoms found in the cases under our observation.

All the cases we have seen have been males, and the majority of them lived in Model Lodging-houses, where they bought and cooked their own food. The remainder lived alone in houses under practically the same conditions. All were unskilled labourers, who were not obtaining constant employment. Their ages ranged from 21 to 72, the average age of the cases being 52. Most of the cases have occurred in May, June, and July, the season when fresh vegetables are scarce and dear. Moreover, when a man has to cook his own food he may not be bothered with cooking vegetables, and his flesh food is always fried. We found that, as a rule, these patients had been living, for long periods, on a diet which consisted mainly of tea, bread and margarine, sausage, ham, and tinned meats.

We think there is great room for improvement in the arrangements for feeding inmates of Model Lodging-houses. Uncooked food is bought from the store in the Model and cooked on a hot plate. There is a limited number of utensils for cooking, and a large number of men wanting to use them at meal hours. Further, owing to the risk of having his food stolen, the man has to keep a constant watch over it. Accordingly, the kind of food that is bought is such as can be cooked in the minimum of time. Frying is the favourite method of cooking, and as this requires a very high temperature any vitamines present in the food are destroyed. The Corporation has now opened National Food Kitchens in Glasgow. They might extend this system by attaching Food Kitchens to their Model Lodging-houses, and so give a lead to the proprietors of private Models.

Signs and symptoms.—The earliest symptoms most commonly complained of by those patients were pain, stiffness, and discoloration of the legs. On further questioning it was elicited that most of them had, for some time prior to the appearance of these symptoms, felt weak, apathetic, and generally out of sorts. In a few instances there was breathlessness and vertigo after exertion.

Examination of the patients revealed, in all the cases, patches of purplish discoloration of the skin with deep swelling, which felt brawny and elastic to the touch. In most of the cases these brawny patches were present over the calves of the legs, extending in a few to the popliteal region, aud even up the posterior aspect of the thigh. These swellings on the calves and in the popliteal spaces were so tense that they caused flexion of the legs in two of the cases. Commonly there was swelling and discoloration on both sides of the tendo-Achillis extending below and behind the malleoli, and even on to the dorsum of the foot on the outer side. There was also, frequently, considerable œdema round the ankle-joints.

In addition, petechiæ, dark purple or crimson in colour, were noted on the peroneal aspects of the legs, on the insides of the knees, and on the inner aspects of the thighs. In a few cases petechiæ were also noted on the lower part of the abdomen. These petechiæ were associated with the hair follicles, raising them and giving the impression to touch of "cutis anserina."

The skin of the body was dry and rough, and of an ashy-grey appearance. In most of the cases the complexion was of a peculiarly sallow tint. All the patients complained of cramping pains in the legs, and most of them had pain in the gluteal muscles, and tenderness over the shins in the middle three-fifths of the tibia. In one case there were several ulcers over a patch of ecchymosis, showing exuberant granulations of a dark crimson colour which bled readily on the least irritation.

Changes in the mouth.—The gums were spongy and swollen, dark purple or red in colour, tender to touch, and bled easily. Between the teeth the margins of the gums were hypertrophied and frequently ulcerating, while the necks of the teeth in front and behind were exposed. So prominent were these appearances in one case that it was sent into the Hospital diagnosed as "cancer of jaw."

Pyorrhœa was frequent. In one patient who was edentulous, the gums were firm and of a bluish-slaty colour, while on the right side of the palate there was a patch of ecchymosis extending from the margin of the gum almost to the mid-line of the palate. The tongue in some cases was moist and clean, but in others it was dry and fissured, with a slight yellowish fur at the back. The breath had a musty, fetid odour.

Eye changes.—The eyelids in many were swollen, and in a few were so thick and heavy as to give the appearance of ptosis. The conjunctivæ, as a rule, were injected, while several patients had changes in the lens. Nebulæ of the cornea were seen in a number of cases, and two had night-blindness.

Other signs and symptoms.—In all the cases the heart sounds were weak, and a soft systolic murmur over the aortic area was heard. In two cases a hæmic murmur was heard over the jugular vein at the root of the neck.

In eight cases a blood-count was made, and showed that on the average the red blood corpuscles were not diminished to any extent, but the colour-index was low, usually about 0·5. The white blood corpuscles were about 4-5,000 as a rule; the polymorph. neutrophiles being about 80 per cent; eosinophiles, 4 per cent; and lymphocytes, 16 per cent. Of the latter, about 20 per cent were large mononuclears.

The urines were for the most part acid and of normal specific gravity. Indican was constant, and albumen was found in a number of cases. In two cases a trace of acetone was present. The body temperature was normal. The bowels were constipated. In one case there was a slight hæmoptysis without any apparent reason.

Treatment.—The treatment was very simple—rest in bed with ordinary hospital diet, abundance of green vegetables, lemon, malt, and cod-liver oil; and, later, tonics containing iron and arsenic. Antiseptic mouth washes were used.

The more prominent symptoms disappeared in the course of a fortnight. The swelling and discoloration disappeared from below upwards, the patches at the ankles and over the popliteal spaces being the most persistent. The pains in the legs and the tenderness over the shins vanished early, but the stiffness of the legs was the last to go. After the discoloration had faded, there could for long be felt a crepitant sensation on pinching the calves. The petechiæ lasted for some time, gradually fading away.

The mouth symptoms cleared up rapidly, the gums becoming firmer and less prone to bleed. The complexion rapidly improved, and the skin became less dry and rough.

In the course of a month or at most six weeks all the symptoms had gone, and the patient felt quite well.

We append clinical notes of three fairly typical cases.

CASE I.—D. M., hammerman, aged 72 years, was admitted from Rutland House on 21st June, 1920, complaining of weakness, pain, and stiffness of legs, with discoloration of two weeks duration.

Medical certificate of admission order gave his disability as "varicose ulcer."

Examination showed œdema of ankles with discoloration, especially behind malleoli, and on both sides of tendo-Achillis. The discoloration was of the "bruise" type, hard, brawny, and tender to touch. There was no history of injury. On the dorsum of feet were œdema and crimson mottling. On the lower part of both shins petechiæ were present, so closely set together as to give the impression of a large crimson patch. This was not tender. There was great tenderness to touch over the middle three-fifths of the shins. There was no tenderness, swelling, nor discoloration of the calves of the legs. Over the peroneal regions and along the course of the saphænous vein were scattered dark coloured petechiæ. There was great stiffness and pain on movement of legs. No varicose veins were present.

Heart sounds weak and clicking; soft systolic bruit heard in aortic area. Pulse regular, rapid, and of low tension.

Patient was edentulous. Gums pale, firm and smooth. Ecchymosis of hard palate three-quarters of an inch long by one-quarter of an inch broad, extending from the margin of the gum on the right, nearly to centre of palate. Tongue dry, red, and glazed; slight fur at the back. Rather constipated; appetite fairly good.

Urine. — Specific gravity, 1018; acid; trace of albumen; indican; trace of acetone.

Blood. — Red blood corpuscles, 4,800,000; white blood corpuscles, 4,500; hæmoglobin, 50 per cent; colour-index, 0·48; polymorph. neutrophiles, 80 per cent; eosinophiles, 2 per cent: small lymphocytes, 15 per cent; large mononuclears, 3 per cent. Film showed nothing of much further importance.

Eyes.—Conjunctivæ and sclerotics injected and thickened.

Difficulty of vision towards dusk or in the dark. Did not notice it in the gas-light, however.

Previous to admission his diet had consisted of bread, margarine, tea, ham, sausage, and sardines. He never cooked vegetables, even potatoes.

Treatment.—Mouth washes as routine. Diet—Ordinary, with milk (1 pint), egg, vegetables, and lemon juice. Medicine—Calomel (gr. 1), salol (gr. 5), three times a day for three days after admission; salines.

26th June, 1920.—Œdema gone: discoloration lessening.

30th June.—Discoloration practically gone. Still some pain and stiffness of legs.

4th July.—Petechiæ still remain. Otherwise all symptoms have cleared up.

Left hospital voluntarily.

Case II.—J. M., labourer, aged 60 years, was admitted from Rutland House on 26th June, 1920. The medical certificate upon which he was sent in recorded the diagnosis "eczema of legs."

Complaint.—Pain and stiffness of legs with discoloration, some weeks' duration. Examination showed discoloration of calves of leg of "bruise" type, with some swelling and much brawny hardness. There was great tenderness to touch. The popliteal spaces and even up the backs of the thighs showed tense swelling and discoloration of the skin. There was also swelling of the ankles, with "bruising" below and behind the malleoli. Over the peroneal areas and on the inner aspects of the thighs were petechiæ.

The gums were swollen and spongy, and bled easily. Hypertrophy of the gums was observed between the teeth, which were exposed and were also so loose that they could be picked out by the fingers.

Heart sounds were weak, and the usual aortic systolic murmur of a soft character was heard.

The urine was acid, but showed no abnormalities to usual tests, save indican.

There was constipation to a considerable degree.

His diet had previously been of the usual type in "Models."

Treatment.—Mouth washes and attention to teeth; calomel (gr. 1), salol (gr. 5), three times a day for three days; salines each morning: malt and oil; ordinary diet and 1 pint of milk; vegetables and one lemon daily.

1st July, 1920.—Much improved. Less pain and stiffness. Discoloration going, Mouth looks better. Practically no fœtor of breath.

8th July.—Bluish discoloration mostly gone, leaving only yellowish stains. Popliteal ecchymosis still distinct and hard.

18th July.—No pain. Some stiffness down backs of legs and crepitant sensation on pinching calves. Some discoloration still present, also petechiæ.

26th July.—Went out, feeling all right.

CASE III.—R. M., night watchman, aged 70 years, was admitted from Plantation Model on 8th June, 1920, with the diagnosis "œdema of legs."

He had considerable œdema of legs, with bruise discoloration of calves of legs, brawny and elastic to touch; œdema and discoloration of ankles and dorsum of feet; petechiæ along shins, peroneal regions and inner surfaces of thighs; tenderness of shins to pressure.

Gums tender, swollen, and bleeding freely, purplish-red in colour; teeth loose.

Eyes.—Pupils dilated; dimness of vision from early cataract.

Heart dilated, sounds soft and regular. Soft V.S. aortic murmur heard. Pulse soft, low tension. Subjective symptoms—Giddiness and breathlessness on slight exertion.

Blood.—Red blood corpuscles, 4,200,000; white blood corpuscles, 4,500; hæmoglobin, 40 per cent; colour-index, 0·45; polymorphs., 70 per cent; small lymphocytes, 24 per cent; large mononuclears, 6 per cent.

Urine.—Acid, trace of albumen; indican.

Bowels.—Constipated, as a rule, but after admission had diarrhœa. Motions dark in colour and foul smelling.

Previous to admission this man had no vegetable and almost no meat element in his diet. The diet consisted of bread and tea thrice daily. Occasionally on the nightshift he had a sandwich containing ham.

12th June, 1920.—Considerable improvement. Appetite good. Bowels regular. Less pain in legs.

21st June.—No pain. Discoloration nearly gone, except behind knees and below and behind malleoli.

28th June.—Some discoloration still in popliteal regions. Petechiæ still seen. Otherwise general improvement. Discharged on 30th June, feeling fairly fit. Still somewhat anæmic-looking.

Treatment.—Ordinary diet; vegetables: one pint of milk; one lemon. Laxative at first. Mist. Kino Co. for diarrhœa. After a fortnight he had a tonic containing iron and arsenic.

THE TONSIL AND ITS FUNCTION.*

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Among the most outstanding and epoch-making work in medical science during modern times has been the researches into the function of the various internal secretory organs of the body. The results of these researches have been almost revolutionary, and have added immensely to our knowledge of the human organism. Each organ whose true function has been in doubt has been studied in great detail, and at the present moment attention is being directed to the tonsil. Thousands of children are being subjected to the operation of removal of the tonsils and adenoids every year, and considerable uncertainty exists in the minds of a number of the medical profession whether such wholesale removal of these organs is justifiable. They fear that by such procedure the operator may be depriving the child of an organ which plays an important, though up till now unknown, part in the general metabolism of the body. That far-reaching and striking changes for the better do take place in the health of the child by the removal of these offending organs they cannot deny, but they prefer to walk warily, and to suspend judgment until some certain knowledge of the place of these bodies in the organism is placed before them.

Now, I would seek for a short time to-day to consider with you the possible function of the tonsil, and I would propose to examine this question from three different points—firstly, to consider the matter from a developmental point of view; secondly, to discuss the question phylogenetically: and thirdly, to seek for some ill effect on the organism due to the loss of such possible function. Diseased tonsils and adenoids are undoubtedly more prevalent among the children of the present day than formerly. In so far as the condition is so frequently met with it is a disease of modern times, and it is an interesting point to consider that prehistoric man did not suffer from enlarged tonsils and adenoids. This can be made out from examination of the skulls in the Museum of the Royal College of Surgeons. The condition would seem to be essentially British, since it is more prevalent among the children of Great Britain than any other country; and, should a Britisher and his wife go to live upon the Veldt or in South America their children will tend to suffer from enlarged tonsils and adenoids, though the condition be comparatively uncommon among the children of their adopted country.

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* Lecture delivered to Post-Graduate Class, Royal Infirmary, Glasgow, September, 1920.

Like the thyroid, the parathyroids, and the thymus, the tonsil is formed from an out-pouching of the epithelium lining one of the branchial grooves. About the fourth month of fœtal life solid buds of epithelium grow into the mesenchyme from the second branchial groove. The central cells of these buds become cornified, and are thrown off; thus hollow tubes opening into the depressions are formed, and these hollow tubes represent the crypts of the tonsils. Lymphocytes collect round these tubes and form follicles. The parathyroids and the thymus are formed in exactly the same way, beginning as out-pouchings of the epithelium from the lining of the branchial furrows. Here, however, the similarity ends. These out-pouchings become completely separated from the floor of the pharynx, and migrate into the neck as solid masses, which later become divided into compartments by trabeculæ of connective tissue. Thus we see there are essential differences in the formation of these two sets of organs. In the case of the tonsil the original cells which were outbudded from the epithelium lining the pharynx remain continuous with, and of essentially the same structure as those of the pharyngeal epithelium. The great mass of the tonsil, as we understand it in man, is composed of masses of lymphocytes which have been deposited in the mesenchyme surrounding the hollow tubes which represent the original out-pouchings of epithelium. In the case of the parathyroids and thymus, the out-pouchings become completely shut off from the pharynx, and go to form the glands, so that the essential part of the organ is composed of a portion of the original epithelium which lined the branchial groove.

Now the tonsil, as seen in man, differs considerably from that organ in its original state. M'Murrich and others tell us that the supra-tonsillar fossa is a portion of the original second branchial groove. In man the fossa represents that portion of the groove from which out-pouchings of solid buds of epithelium took place, and around which buds the lymphocytes collected to form follicles. Owing, however, to an excessive development of lymphoid tissue on the inner or lower lip of this sack, the supra-tonsillar fossa appears to be above what is commonly called the tonsil. The original tonsil is not a projected mass, but a sack-like diverticulum with a blind end, and it is erroneous to call the mass of lymphoid tissue which projects into the pharynx the tonsil. In the tiger and the leopard the tonsil is seen very nearly in its original state. It is represented by a **V**-shaped opening in the mucous membrane, which leads into a short tube whose mucous membrane is continuous with that of the pharynx. This tube is surrounded by a small amount of lymphoid tissue. In certain monkeys, and in the kangaroo, we find that the tube is shortened, and that there is a greater deposit of lymphoid tissue about the lower lip. In the dog and in the bear we find a further stage, a still greater deposit of lymphoid tissue on the lower lip, giving rise to a solid projection into the pharynx, while in man the deposit of lymphoid tissue on the inner lip is still greater, and the mass bulges into the pharynx. Thus the tonsil, as we understand it in man, is a variation from the original type. The true tonsil consists of the supra-tonsillar fossa with the crypts formed from the out-pouchings of the original epithelium, opening into it and surrounded by a certain amount of lymphoid tissue. The solid projecting mass which we see in the pharynx is merely an excessive proliferation of lymphoid tissue on the original lower lip of the sack. So that, in endeavouring to trace the tonsil further in its development, attention must be directed to the supra-tonsillar fossa.

Man belongs to the vertebrates which originated from the prostracan group. In this group the excretory organs were in the nature of coxal glands, which must have existed originally in every segment of the body. Now excretory organs which no longer excrete to the exterior do not disappear, but retain functions, though of a different character. They either become ductless glands taking up effete substances and excreting into the blood, or become glands of the nature of lymphatic glands. This change has been abundantly confirmed by various observers. Not only is this the case when the whole coxal gland ceases to excrete to the exterior, but the same changes may take place when part of the gland ceases to excrete. Mass has been able to follow out the conversion of the nephric tubules in myxine into tissue resembling that of a lymphatic gland, while Balfour, whose observations have been confirmed, has been able to demonstrate the same changes in the case of the head kidney of certain teleostii. Hans Rabl in 1891 and Aichel in 1900 have demonstrated that the adrenals, at all events in parts, are derived from some part of the walls of excretory organs. Gaskell considers that the parathyroids, thymus, and tonsils are the derivatives of the coxal glands of the protracan group, which existed in the upper segments of the body, and the statements of different authors support this view, though Van Wijhe will not go so far as to accept this as absolutely definite. Everything, however, points to the theory being sound that the tonsil represents a part at least of the original excretory organ from the second branchial groove. Now it has been fully demonstrated in other segments of the body that an excretory organ which no longer excretes becomes either an internal secretory gland or a lymphatic gland. The parathyroid is recognised to be an internal secretory gland. In this gland, as in others, the original epithelial cells play an important part in the formation of the gland, and, as in the case of others, these cells become shut off from the exterior. In the tonsil, however, this does not occur. The epithelial elements in no way become specialised. They do not become shut off from the exterior, and differ in no way from the cells from which they have originated. Thus the tonsil which represents a part of the original excretory organ follows the same course as that of excretory organs in other parts of the body. Not having developed into an internal secretory gland, it becomes a lymphatic gland. In its development it differs radically from the development of the excretory organs in its immediate neighbourhood. No specialised cells go to form the tonsil. It is chiefly a collection of lymphoid tissue differing in no way from that of the other lymphatic tissue in the body. We can find nothing in the development of the tonsil or in its phylogenetic connection which points to its being an internal secretory gland. Should the tonsil have any function beyond that common to lymphatic tissue in other parts of the body, it would be natural to expect some change in the individual by the loss of such function. It has been suggested by some that the tonsil is a secretory gland whose function is as yet unknown. But no evidence has been brought forward to support this view, and I have sought in vain for any evidence of harm accruing to the individual by its removal. The evidence, indeed, has all been in the other direction, and where the tonsils and adenoids have been properly removed the results have been most striking in an improvement of the general condition of the child. Leonard Williams has suggested that the tonsils have a function as yet unknown, in that we frequently find the tonsils becoming enlarged in those cases where there is an inadequacy of thyroid function, and he suggests that this hypertrophy is an attempt on the part of this organ, by an increased secretion, to compensate for the loss of the thyroid function. He produces, however, no evidence to support the assertion that the tonsils produce an internal secretion beyond the fact that they become enlarged. This enlargement is capable of a simple explanation, in that, in the majority of cases of derangement of the thyroid function there is, as a rule, a condition of intestinal toxæmia, and it is a well-known fact that gastro-intestinal derangement in a child, if continued over a period, is almost invariably accompanied by hypertrophied tonsils and adenoids, apart altogether from any question of deficiency in thyroid function. It has also been suggested that hypertrophy of the tonsils in a child is due to the loss of thyroid secretion through artificial feeding. Thyroid secretion is necessary to the well-being of the child, and this, as a rule, is got from the mother's milk, the thyroid not properly functionating in a child at birth. Cow's milk is deficient in thyroid secretion, and it is held that this deficiency leads to a compensatory hypertrophy of the tonsils and adenoids. This suggestion, however, is not borne out by facts, because we find that in very young children—indeed, up to the time that milk has ceased to become the main food—enlarged tonsils are a rarity in comparison with the frequency in older children. Again, should hypertrophy of the tonsils and adenoids be due to an actual loss of the thyroid secretion, we would naturally find the progressive hypertrophy of the tonsils and adenoids stopped by the administration of thyroid. In practice, however, we find that the administration of thyroid to a child has absolutely no effect on the hypertrophy of the tonsils and adenoids. Structurally, the tonsils consist of lymphoid tissue collected into follicles, and their one and only function is that common to the lymphoid tissue in other parts of the body. The tonsils are active in fœtal life since lymphocytes are to be found in the crypts at birth, but their main activity is during the developmental part of life. Before puberty we find great activity, lymphocytes being formed in large numbers: and after puberty we find that these masses of lymphoid nodules tend to atrophy. This activity is common to the lymphatic organs in other parts of the body. It is not confined to the tonsils alone, since the mesenteric glands are often so enlarged in a child as to lead the unskilled observer to imagine that they are diseased. Some writers have attempted to exaggerate the importance of the tonsil by laying great stress on its undoubted function as a lymphatic gland. They consider the tonsils act as sentinels, ready to grasp and destroy any harmful organism entering the body by the mouth.

Such a picture is almost too fanciful to be taken seriously. It gives to the lymphocytes power and importance totally out of keeping with our knowledge of these cells. It has been pleaded that they ought to be left in order to resist infection, such as cerebro-spinal fever and poliomyelitis: but in a recent epidemic of the latter disease it was found that the children who had had their tonsils removed were rarely attacked by this disease, and that in those cases which were affected the infection was of a mild type. Seydell has also found that in 203 cases of poliomyelitis 200 children had enlarged or diseased tonsils, and in the 3 cases where the tonsils were partially absent the paralysis was slight, and recovery rapid. Those facts have been borne out by other observers. Thus, we are forced to the conclusion that the tonsil represents an infinitesimal portion of the lymphoid tissue of the whole body, with a corresponding amount of functional activity. The loss of this function is of no importance to the individual, and this fact helps to explain why no ill-effect has been observed in the child from the proper removal of the tonsils. The remarks made in regard to the tonsil apply equally to the adenoids. They are recognised to be a mass of lymphoid tissue rather loosely collected into follicles, and so far the question of an internal secretory function does not affect them. The enlargement of the tonsils and adenoids as a rule is conjoint. With enlarged tonsils the adenoids are always present, but we may at times meet with hypertrophied adenoids without enlargement of tonsils. It is often a very difficult matter to determine what constitutes an enlarged tonsil, since the amount of projection of the mass into the pharynx bears no relationship to the true size of the tonsil. There are two main types of tonsils met with in childhood. In the one case we find the mass projecting into the pharynx, in the other case very little of the tonsil is seen projecting, the greater portion being buried between the pillars of the fauces; and, if all the tonsils removed from a large number of cases be collected together, it will be found that there is little or no difference between the size and weight of buried and projecting tonsils.

Mechanical interference with respiration is a serious matter, and if the breathing is obviously obstructed by the presence of enlarged tonsils and adenoids there will be general agreement that these organs should be removed. The effect of this condition on the well-being of the child is marked, and the laity have come to recognise these signs and symptoms, and in many cases of themselves demand the removal of the offending organs. The typical picture of a child suffering from enlarged tonsils and adenoids is known to all of us. The open mouth, the raised eyebrows, the pinched nose, the protruding upper lip, and the general vacant expression of the face, are too well known to call for repetition. The high-arched palate and the projecting upper incisors are part of the penalty paid for mouth breathing, while in a large number of cases we find the breast "pigeon-shaped." This latter deformity was formerly believed to be due to mouth breathing, but it is now recognised that this condition is caused by forced nasal breathing while the child is asleep. The effects of hypertrophied tonsils and adenoids are to a great extent mechanical. The condition is self-evident, and in a vast number of cases the appearance of the child, without any examination of the throat, suggests the diagnosis. But sufficient attention has not been paid to those cases in which the tonsils and adenoids do not obtrude themselves on the notice of the examiner on account of their size, and it often happens that small inconspicuous tonsils, with a small amount of adenoid tissue, are sources of danger to the child. Perfectly innocent-looking tonsils may, on examination microscopically, be found to be the site of numerous foci of infection. The tonsils, as we have already seen, have numerous crypts running down almost to the capsule of the gland, and it is in the presence of these crypts that the danger lies. They are filled with *débris* consisting for the most part of cast-off epithelial cells and lymphocytes. Here we have a most excellent breeding-ground for micro-organisms entering by the mouth, and, far from these lymphocytes destroying the organisms, they rather supply a suitable feeding-ground for their propagation. It will be readily understood how the presence of these organisms in the tonsils may cause enlargement of the cervical glands, either by direct infection of these glands or by the irritation of their toxins. An interesting series of experiments has been carried out demonstrating the intimate connection between infections of the crypts of the tonsils and cervical adenitis in cases suffering from cervical adenitis without suppuration. It was found that on emptying the *débris* out of the crypts of the tonsils—that is, such crypts as were capable of being inspected—and instilling a weak iodine solution into the crypts, in a large number of cases marked improvement in the glandular condition was brought about. The cervical glands are frequently affected in childhood by the tubercle bacillus, and it is an undoubted fact that in a very large number of such cases the entry of the infection is through the mucous membrane of the mouth, nose, or pharynx.

Recent researches have shown that the tonsils are definitely affected by the tubercle bacillus in a large number of such cases. Mitchell has found that in nine per cent of cases in which the tonsils were removed for simple hypertrophy positive results were obtained from inoculation of guinea-pigs. On microscopic examination it was found that the lesion was just beneath the epithelium, mainly of the crypts, or close to the capsule. The type of bacillus was most frequently bovine. In these cases it was only possible to diagnose the tubercular infection after inoculation and microscopic examination, there being no evidence of ulceration of the tonsil itself. We would therefore urge that in all cases of cervical adenitis the tonsils should be carefully examined and considered as a possible source of infection. If adenoids are present they should certainly be removed. Indeed, one would go so far as to ask for the complete removal of these organs in all cases of cervical adenitis, since it has been our experience that in many cases the glands recover completely after removal of apparently innocent tonsils and adenoids. Of course, where suppuration has already occurred in the cervical glands, removal of the tonsils will not be sufficient; surgical treatment of the gland will be necessary. But I would suggest for your consideration whether the majority of cases of tubercular cervical adenitis do not have their origin in a primary inflammation of the glands from some foci of infection about the upper respiratory tract. It is now admitted that a great many systemic infections arise from infection which is present in the crypts of the tonsils. That a close relationship exists between acute rheumatism and acute tonsillitis can no longer be doubted. The articular manifestations in acute rheumatism and the acute inflammation of the tonsils are, in the majority of cases, intimately connected with one another. In some cases the acute tonsillitis precedes the joint affections, in others the joint affections occur first. Patients liable to attacks of acute rheumatism frequently suffer from attacks of acute tonsillitis without affection of the joints. These are believed by competent observers to have been attacks of acute rheumatism which have aborted. That the tonsil is the original focus of infection in a large number of cases of acute nephritis, rheumatism, arthritis, endocarditis, &c., has been fully demonstrated. That all cases of such diseases are due to tonsillar conditions is not suggested, but so many cases have been relieved, and in so many cases have the progressive lesions been stopped, that in all such cases one must consider the possibility of the tonsil being the source of infection. In any individual case the physician may not be in a position to give a definite opinion that the tonsil is the cause of the condition. Infection lies deep in the crypts which we have seen run down in some cases to the capsule of the tonsil, and, while superficially the tonsil may appear to be healthy, on microscopic examination it is often found to contain those organisms which, injected into animals, will produce symptoms and lesions identical with acute or chronic rheumatism, endocarditis, &c. In arthritis the best results have been got by following the removal of the tonsil by autogenous vaccines obtained from organisms found in the tonsillar crypts, thus showing the intimate connection between the two conditions. In endocarditis, especially that type of progressive valvular mischief met with in children, which is so often accompanied by what are called "growing pains," if no definite systemic condition can be found to account for the progressive nature of the cardiac lesions, marked improvement will in a large number of cases be brought about by removal of the tonsils. Of course, it is not suggested that removal of the tonsils will have any effect upon the valvular mischief which is already present, but the removal of this very frequent source of infection will, in a large number of cases, stop the further progress of the disease by cutting off the source of supply of the toxins.

These facts which I have placed before you by no means exhaust the subject, but I think that I have said enough to prove to you that the tonsil is a source of grave potential danger to the child, not only indeed to the child but also to the adult. Its early and complete removal must be insisted upon should there be any reason to suspect that its presence is having an ill effect on the well-being of the individual. Not only must we insist upon the removal of the tonsil, but we must insist upon this removal being complete. It is not justifiable to shave off the projecting part of the tonsil. This operation leaves the deeper portion of the tonsil, which is liable to hypertrophy, necessitating further operation at a later date. Not only is this so, but the deeper portions of the crypts are allowed to remain, and it is in these deep portions of the crypts that infection is most liable to lurk. Enucleation of the tonsils is a simple operation, and in the hands of the skilled operator requires only a few seconds to perform. It is not necessary to dissect out the tonsil, provided a suitable guillotine be used. The best type of guillotine is one with a solid blade, since, as I show you, this other guillotine with the circular blade and the prongs is useless for the purpose. On the whole, the bleeding after enucleation is less than after a partial removal of the tonsils. Both operations take the same time to perform. It is not justifiable to perform the operation of partial removal of the tonsils, since the patient is exposed to more risk than in enucleation, and in the end is left in the same state as regards infection as before. In cases of repeated attacks of tonsillitis and quinsy, the patient can be promised a complete cure by enucleation, which he cannot be by the antiquated procedure of partial removal. In all cases of suspected or apparent disease of the tonsil, enucleation is the only justifiable procedure.

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CORRESPONDENCE.

THE following communication was received from Dr. Stewart Barrie, and has been submitted to Dr. Fleming, so as to enable us to publish his reply at the same time.—THE EDITORS.

SIRS,—I have read with great pleasure the interesting contribution in the August number on "The Digestion and Absorption of Fats in a Case of Congenital Atresia of the Bile Ducts," by Drs. Hutchison and Fleming. It is an excellent piece of work, and because of that I venture to offer the following criticism of the chemical side of the contribution. The facts are stated clearly, and most important of all, the actual figures derived from analysis are given. It is with these figures I wish to deal, and with the deductions that follow therefrom.

A casual glance at the table on page 69 shows a curious error; each column is averaged, but columns 4, 5 and 6 are not capable of being averaged, as they deal with ratios, not quantities. The figures in column 6 should be extended to at least three places of decimals for accuracy. Thus, taking the first ratio 1·3, which means 30 parts of "solids not fæcal fat" to 100 parts of "fæcal fat," and extending it to its true value, 1·392, it is then seen that 39·2 parts of "solids not fæcal fat" are present for every 100 parts of "fæcal fat," a very considerable difference which cannot be neglected. Other arithmetical errors having been found, the whole series was re-calculated on the basis of columns 1, 2 and 3, and is now re-stated in a form which, it is hoped, will avoid mental perturbation on the part of readers who take the trouble to check the figures.

Columns 1, 2 and 3 are actual statements of fact, but another column is added to these, viz., the amount of "fat" in each day's fæces; columns 4, 5 and 6 are obtained by calculation from the first four; instead of taking a daily average to determine the average "percentage absorption" and "percentage absorption calculated from weight of fæces," it is much simpler to determine these two "absorptions" from the sum of columns 1 to 3.

With these reservations the table on page 69 becomes as follows:—

	Fat Intake in Grams.	Fæces Weight in Grams.	Fæces Fat in Grams.	Fat Retained in Grams.	Percentage Absorption Observed.	Percentage Absorption Calculated from Weight of Fæces.	Ratio of Fæces Weight to Fæces Fat.
1.	20·3	22·7	16·3	4·0	19·7	62·76	1·392
2.	20·8	35·2	21·5	–0·7	–3·36	43·60	1·637
3.	17·9	21·7	13·7	4·2	23·46	59·66	1·583
	59·0	79·6	51·5	7·5	12·71	55·03	1·5456

The ratio of fat absorbed to calculated absorption is 0·231 to 1: in other words, the observed fat absorption is a little less than one quarter of the calculated.

The "percentage absorption calculated from the weight of fæces" seems to me to be too low, and to warrant reconsideration. In comparing such abnormal fæces as those under consideration with the fæces of a normal child, it is not desirable to make the comparison directly as in the foregoing table, but to base the calculations on some group of constituents which may be assumed to be constant in both cases. This common constituent is to be found in the "solids not fat," which in the present instance can be shown to amount to 28·1 grammes. To give the 3 to 1 ratio of fæcal weight to fæces fat requires 14·05 gms. of "fat," hence the "percentage absorption calculated from weight of fæces" is 76·2. The ratio, therefore, of percentage absorption to calculated absorption is 12·71 to 76·2, or observed absorption is only one-sixth of the calculated instead of a little less than a quarter as previously stated.

It is a curious fact that Blyth[1] gives the total insoluble fatty acids of milk fat as 87·9 per cent. From columns 1 and 3 of amended table one finds by calculation that the "fæces fat," which is admitted to contain 86·9 per cent of stearic acid by calculation, amounts to 87·29 per cent of the milk fat consumed. This is an extraordinary coincidence, and apparently would suggest that the "fat retained" consists of the glycerine derived from the glycerides, of the insoluble fatty acids, and also the products of hydrolysis of the butyrin and similar substances of the milk fat, which are soluble in water. According to this view the presence of bile is necessary for the absorption of the fatty acids of high molecular weight, *i.e.*, oleic, palmitic, and stearic acids.

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[1] *Foods*, by A. W. Blyth, 1888 edition, pp. 301.

T. STEWART BARRIE.

13 SOMERSET PLACE,
GLASGOW, *30th September, 1920.*

SIRS,—It is with much interest that I have read Dr. Barrie's amplification and criticism of the paper by Dr. Hutchison and myself on "The Digestion and Absorption of fats in Congenital Atresia of the Bile Ducts." In the absence of Dr. Hutchison in India, I should like to refer to some of the points with which Dr. Barrie deals.

With regard to the objection that the averaging of percentages is arithmetically incorrect, we are aware of this, but it is habitually done in work of this nature and undoubtedly serves a useful purpose.

Regarding the criticism that the figures in column 6 of our table have not been taken out to three places of decimals, I consider that the accuracy of such clinical experiments does not justify this. I am, however, grateful to Dr. Barrie for doing this for us, for it brings the findings on the three days during which the observation lasted into closer conformity, and still further emphasises the highly defective absorption of fats in this case.

The objection to our method, admittedly a new one, of comparing normal and abnormal stools, seems to me invalid. The previous work of Dr. Hutchison has shown that there is a fixed ratio between the dried fæcal weight and the fæcal fat of 3 to 1, not only in health but also in several nutritional diseases. For this reason, therefore, we adhered to this standard of comparison. Dr. Barrie's idea of comparing fæcal fat to fæcal solids not fat was, I know, considered by Dr. Hutchison in his early work, but for various reasons was abandoned.

I am much interested in the remarkable coincidence pointed out by Dr. Barrie that the percentage of insoluble fatty acids in milk and the percentage of the fæces fat to the milk fat ingested in our case is almost the same; but though we expressed the quantity of fatty acids found in the fæces in terms of stearic acid, this does not in any way imply that the fatty acid in the stools was actually stearic acid, any more than that the total acids of the stomach contents, though commonly expressed in terms of hydrochloric acid, are actually hydrochloric acid.—Yours, &c.,

GEOFFREY B FLEMING.

26 NEWTON PLACE,
GLASGOW, *12th October, 1920.*

Obituary.

WILLIAM WALKER, M.D.Glasg., L.R.C.S.Ed.,
SHAWLANDS.

By the passing of Dr. Walker on 14th November, Pollokshaws has lost its oldest medical practitioner. Born in Ayrshire in 1837, he received his medical education at Glasgow and Edinburgh Universities. He settled in Pollokshaws fifty-seven years ago, and, in the midst of a busy general practice, found time for much useful public work on its Town Council, and as a member of the School Board of Eastwood. For over forty years Dr. Walker served the parish of Eastwood as Parochial Medical Officer. He is survived by four daughters and four sons, of whom two are members of the medical profession.

WILLIAM BRUCE, A.M., M.D., LL.D.Aberd.,
DINGWALL.

In the death of Dr. William Bruce, of Dingwall, the medical profession in Scotland has lost one of its most respected members. Dr. Bruce, who was 85 years of age, was a native of Aberdeenshire. He studied at King's College, Aberdeen, graduating A.M. in 1855 and M.D. in 1858. In 1886 he was elected direct representative for Scotland on the General Medical Council, and it is in this connection that he is best known to many in the profession for his long and useful service. In 1889 Dr. Bruce became Medical Officer of Health for Ross-shire, and relinquished general practice, though his services as a consultant continued to be much in demand in the northern area of Scotland. He was also intimately connected with Strathpeffer Spa, and made a special study of sciatica and allied troubles. His contributions to medical literature were such as would be of interest to the general practitioner. Papers on "Contagious Pneumonia" were published in the *British Medical Journal* in 1883 and 1886, and in 1913, "Sciatica, a fresh study," founded on examination of 700 cases, was well received. In 1891, in recognition of his high professional standing and attainments, his *Alma Mater* conferred on him the degree of LL.D. He retired from all official appointments at the end of 1919.

CURRENT TOPICS.

Glasgow University.—At a graduation ceremony held on 13th November, the following degrees were conferred:—

DOCTORS OF MEDICINE (M.D.)

I. With Honours.

Archibald Leitch, M.B., Ch.B. Thesis—"Studies in the pathology of tumours."

Allison David McLachlan, M.B., Ch.B. Thesis—"Observations on rodent ulcer, with an analysis of 72 cases."

II. With High Commendation.

John Pearson M'Vey, M.B., Ch.B. Thesis—"The sero-diagnosis of pregnancy by the Abderhalden reaction."

Malcolm Manson, M.A., M.B., Ch.B. Thesis—"Lethargic encephalitis: a clinical study of eleven cases with six autopsies."

III. With Commendation.

John Anderson, M.A., B.Sc., M.B., Ch.B. Thesis—"A study of dysentery in the field, with special reference to the cytology of bacillary dysentery and its bearing on early and accurate diagnosis."

Harold Livingstone Coulthard, M.B., Ch.B. Thesis—"Diagnosis of tuberculosis by the complement fixation method."

Alexander Glen, M.C., M.B., Ch.B. Thesis—"An epidemic of typhus fever in Baku, South Russia, winter 1918-19."

John Steedman, M.B., Ch.B. Thesis—"The prevention and treatment of malaria, with special reference to Greek Macedonia."

IV. Ordinary Degree.

Nicolas Gebbie, M.B., Ch.B. Thesis—"Artificial pneumothorax in the treatment of pulmonary tuberculosis, with special reference to the selection of suitable cases."

John Gibson, M.A., M.B., Ch.B. Thesis—"Some notes on the treatment of venereal disease in a stationary hospital in France, with an analysis of cases."

George Waugh Scott, M.B., Ch.B. Thesis—"A study of malaria and measures for its abatement amongst rubber estate workers in the Federated Malay States."

Royal Faculty of Physicians and Surgeons, Glasgow.—At the annual meeting of the Faculty, held on 1st November, office-bearers were appointed as follows:—President, Dr. A.

Freeland Fergus; Visitor, Dr. W. G. Dun; Treasurer, Mr. George McIntyre; Librarian, Dr. E. H. L. Oliphant; Council, the above officials with the addition of Dr. James A. Adams (representative to the General Medical Council), Mr. J. McGregor Robertson, Mr. J. Forbes Webster, Mr. R. M. Buchanan, Dr. Ebenezer Duncan, Dr. W. R. Jack, Mr. Henry Rutherfurd, Dr. A. K. Chalmers. At this meeting also Mr. Edward Lewis, L.R.C.P., &c., Glamorgan County Hall, Cardiff, was admitted a Fellow.

ROYAL COLLEGE OF SURGEONS, EDINBURGH.—At a meeting of the College held on 20th October, Dr. George Mackay was re-elected President; Dr. R. McKenzie Johnston, Vice-President; and Mr. Alexander Miles, Secretary and Treasurer. At this meeting also a number of Fellows were admitted, amongst whom we note the name of Donald McIntyre, M.B., Ch.B.(Glasg.), of Greenock. It is also of interest to note that the list includes Miss Alice Mabel Headwards, L.R.F.P. & S.G., the first woman to be admitted to this Fellowship.

CONJOINT BOARD, EDINBURGH.—At a recent examination of the Board the following, amongst others, were admitted Diplomates in Public Health:—Joseph Chalmers, M.B., Ch.B., Ronald Thomson Grant, M.B., Ch.B., Dugald Ferguson, M.B., Ch.B., and William Semple Wallace, M.B., Ch.B., graduates of Glasgow University.

SCOTTISH BOARD OF HEALTH.—It is announced that this Board have appointed Colonel Donald J. Mackintosh, C.B., M.V.O., M.B., LL.D., Medical Superintendent, Western Infirmary, to be a member of their Consultative Council on Medical and Allied Services, in room of Sir Harold J. Stiles, K.B.E., resigned.

BRITISH MEDICAL ASSOCIATION: WEST OF SCOTLAND BRANCH.—At a recent meeting of the branch, the question of raising the present professional fees to meet the increased cost of living was considered. The Council recommended that the following rate of charges in private practice should now be regarded as the standard minimum scale:—Visits, 4s.; consultations, 2s.; certificates, 2s.; confinements, £3, 3s. Fees in necessitous cases were to be left to the discretion of the practitioner in attendance.

The Branch also agreed to hold a meeting of the profession on a date as early as possible after the report of the Scottish Consultative Council on Medical and Allied Services had been received. A synopsis of the English report was published in the supplement to the *British Medical Journal* of 16th October, and as it is not expected that the Scottish report will differ materially, the Council urge upon all secretaries to hold divisional meetings to consider the nineteen questions contained in Appendix A of the same issue. This will facilitate debate when the public meeting is called later. Dr. J. R. Drever, Scottish Secretary, British Medical Association, has intimated his willingness to address a meeting on the subject.

GLASGOW BURGH PANEL COMMITTEE.—Some time ago the Committee approached the Scottish Board of Health with a request for a new election to be held at an early date, as no election had taken place since shortly after the inception of the Insurance Act, and the numbers of the present Committee were insufficient for the work. The Board stated, in reply to the first communication, that "the existing Panel Committees Amendments Act (Scotland), 1916, extended until such date, not being later than twelve months after the termination of the war, as the Board may determine." In reply to a further communication, the Board have requested the existing Panel Committee to suggest the names of twice the number of practitioners required to fill vacancies which have occurred. The Board will then proceed to appoint members to existing vacancies which do not fall to be filled by co-option. It is expected that a Panel Election will take place in June, 1921.

DR. JAMES FINLAYSON MEMORIAL LECTURESHIP.—The lecture under this foundation, which was instituted in 1907 to perpetuate the memory of the late Dr. James Finlayson, was delivered on this occasion by Major-General Sir William B. Leishman, K.C.M.G., C.B., F.R.S., F.R.F.P.S.G., on Tuesday, 16th November, in the Hall of the Royal Faculty of Physicians and Surgeons, Glasgow. He chose as his subject, "Enteric Fevers in the B.E.F., 1914-1918," and dealt more particularly with the effects of protective inoculation. He was able to produce statistical evidence in support of its beneficial effects upon the case incidence and the death-rate. We hope to publish the lecture in a future issue of the *Journal*.

UNIVERSITY CLASS FEES.—Representatives appointed by the University Courts of the four Scottish Universities met at Perth, on 6th November, to confer on the question of class fees. The meeting was unanimously in favour of increasing all tuition fees, and recommended for the Faculty of Medicine an addition of not less than 33⅓ per cent and not more than 50 per cent. The Court of the University of Edinburgh at its last meeting adopted the recommendations, and is prepared to take action in accordance therewith.

VICTORIA INFIRMARY.—Dr. R. T. Young has been appointed Medical Tutor.

CHARTERED SOCIETY OF MASSAGE AND MEDICAL GYMNASTICS.—We are glad to invite the attention of the medical profession to the high standard of training now required by the Chartered Society. The Incorporated Society of Trained Masseuses (I.S.T.M.), recently amalgamated with the Institute of Massage and Remedial Gymnastics of Manchester, has obtained a Royal Charter, and the united body is now the Chartered Society of Massage and Medical Gymnastics. The need of a meeting place in Glasgow has been met, and the Clubroom at 13 Newton Place, W., was formally opened on 30th October, 1920. Mrs. Edmund Toms, an early member of the I.S.T.M., presided over the inaugural meeting. Addresses were delivered by Mr. J. Hogarth Pringle, F.R.C.S., who is a member of the Council of the Chartered Society, Dr. James Russell, F.R.C.S.Ed., Dr. John Graham, and Miss Gordon, Inspector of Massage under the Ministry of Pensions. The speakers pointed out the necessity for widening the scope of massage and remedial gymnastics beyond injuries of war, and showed that a considerable amount of conservatism would require to be overcome before the medical profession, with whose members they had to work, could be made to realise the importance of that form of treatment. Mrs. Henry Rutherfurd, secretary of the Club, was the recipient of a presentation in appreciation of her services on its behalf.

REVIEWS.

Handbook of Diseases of the Nose, Throat, and Ear, for Students and Practitioners. By W. S. SYME, M.D., F.R.F.P. and S.G., F.R.S.E. Edinburgh: E. & S. Livingstone. 1920. (9s. net.)

IN a handbook of moderate size the author covers the whole field. The work is well done, and can be recommended to the student. One may differ from the author, but as it is based on his "own practice and observations," it is interesting. We might point out, however, that in atrophic rhinitis with ozœna, the treatment by the alkaline douche, followed by the blowing of the nose, is dangerous—so far as the middle ear is concerned—in the absence of specific directions as to how the nose should be blown. We do not approve of the use of "ice or cold compresses applied over and behind the ear" in traumatic rupture of the tympanic membrane, and we would also demur to the passage of an Eustachian bougie in a muco-serous catarrh of the middle ear. The work is very readable, and there is a breeziness in the writing which is not common in medical text-books, but which is none the less welcome. When it reaches a second edition we would suggest more careful proof-reading, as there is more than the average number of errors. The book is dedicated "To the members of the Scottish Otological and Laryngological Society," and the author tells us it was undertaken at the suggestion of Dr. Walker Downie.

Inguinal Hernia, The Imperfectly Descended Testicle, and Varicocele. By PHILIP TURNER, M.S., F.R.C.S. London: J. & A. Churchill. 1919. (9s. 6d. net.)

THIS slim volume deals with the three subjects mentioned in the title. As regards inguinal hernia, the author is a supporter of the "saccular" theory. Further, he particularly draws attention to the anatomy of the superficial ring, and describes in detail the strong upper boundary of the opening, to which he gives the name "intercolumnar ligament." Following on these anatomical considerations he describes a method of operating, of which the chief features are ligating and dividing the neck of the sac high up, and opening the inguinal canal above the margin of the superficial ring, leaving the intercolumnar ligament intact. The subject of imperfect descent of the testicle is an important one, as, apart from deformity, the question of development of the organ comes to the fore. Further, there is the possibility of the organ becoming the seat of malignant growth. Interesting information on these points is given by the author, but he is unable to throw much light on the etiology of imperfect descent. The various methods of treatment of the condition are considered, and in connection with orchidopexy an operation for transplantation into the opposite half of the scrotum is described. In connection with varicocele the author describes the shortcomings of the usual operation, and advocates "reconstruction and closure of the sheath of the cord." Altogether the volume is an important contribution to the subject, giving evidence of the close attention paid to it by the author, and we would recommend it to the notice of all operating surgeons. Illustrations and printing are well executed.

Oto-Rhino-Laryngology for the Student and Practitioner. By GEORGES LAURENS. Authorised English Translation of the Second Revised French Edition by H. CLAYTON FOX, F.R.C.S.Irel. With a Foreword contributed by J. DUNDAS GRANT, M.A., M.D., F.R.C.S. Bristol: John Wright & Sons, Ltd. 1919. (17s. 6d. net.)

WE feel indebted to Dr. Clayton Fox for the translation from the French of the second edition of the excellent manual of Dr. Georges Laurens. The title of the volume is somewhat formidable. The author modestly says that his object is not to deal with every disease of the ear, nose, and throat, but there is very little that is omitted. On the contrary, it is surprisingly full, and the reader will find information not generally found in English text-books. It sometimes happens, after the tonsil and adenoid operation—no matter how well it has been done—that the result is not all that we should desire. In a vague way the advice is given to let the child have breathing exercises, but there is no definite instructions how this should be done, probably from want of knowledge. In the present volume there is a chapter devoted to "Respiratory exercises," and as it is well illustrated by figures showing the different positions it should be of great service. The book is written for students and practitioners, and hence major operations are not described. The practitioner is told plainly when it is necessary to ask the help of the specialist. The treatment of the various ailments is fully discussed, and a feature of each chapter is that we are told not only "what to do" but "what to avoid." The chapters are short, crisp, and full of information, and practical hints from a wide clinical experience. There is, here and there, a tinge of worldly wisdom in the advice given. For instance, in examination of the larynx in certain "neurotic patients who at once state that it will be useless to examine them, that no one has ever succeeded in seeing their throat; do not continue, it will only increase their displeasure and reflexes and lessen the chance of success. Do not say that the examination has been incomplete, give a prescription, and at the next attendance renew the exploration with or without cocaine." The work is copiously illustrated. There are 324 pages in the book and 592 illustrations. In the appendices are chapters on (*a*) Balneotherapy in Oto-Rhino-Laryngology, Climatotherapy; and (*b*) Industrial Accidents in their relation to Oto-Rhino-Laryngology. Both are well written. In the latter, tests are described for the detection of malingering. We heartily commend the book, and feel sure that the practitioner who reads it and adds it to his library has made a good investment.

The Coolidge Tube. By H. PILON. London: Baillière, Tindall & Cox. 1920. (7s. 6d. net.)

THIS is a translation from the French, and deals entirely with the Coolidge tube. It is divided into three parts—(1) dealing with different models, methods of heating filament circuit, starting, and regulating; (2) with the properties of the Coolidge tube; and (3) with a critical examination of its value. Although the translation has been creditably done, it cannot be recommended to medical men and students who have only an elementary knowledge of electricity and physics, as the author is evidently writing for experts in radiology, nor is it written with the view mainly to its application in medical work. The chapter on protective methods will prove useful to medical readers.

Tuberculosis and Public Health. By H. HYSLOP THOMSON, M.D., D.P.H. London: Longmans, Green & Co. 1920. (5s. net.)

THIS is a very readable little book, for it is written in a clear and pleasant style. It deals with the tuberculosis problem in all its aspects in an able and practical manner, as might be expected from the author's wide and varied experience as sanatorium medical officer, tuberculosis officer, and medical officer of health. Dr. Thomson looks at the problem from all sides. It would be out of place here to deal with the book in all its details, but there are some points which seem particularly worthy of thoughtful consideration. For example, he seeks to dispel the exaggerated fear of infection which obtains with many people, and points out the importance of making a distinction between "open" and "closed" cases of tuberculosis. The following remarks (pp. 21, 22) are of great interest:—"The cycle of life of the bacillus outside the human or animal body is but little known. No doubt it serves some useful purpose in nature in a saprophytic form of existence, and its attack on man is quite accidental, and entirely due to the production of an environment injurious to the human or animal host, but stimulating to the evolution and growth of the organism. Such an environment is produced by the moisture, organic impurities, and warmth found in slums, overcrowded insanitary houses, and insanitary cowsheds." It is well known that the timothy grass bacillus—which exists outside of the animal body as a saprophyte—closely resembles the tubercle bacillus, and it has been shown by experiments on animals that when inoculated into the animal body it is capable of giving rise to pathological results which closely resemble, if they are not identical with, tubercle. Dr. Thomson goes on to say—"But there is also evidence that the bovine tubercle bacillus may give rise to the disease in cattle even in the open, as a result of the frequent pollution of drinking ponds or pasture land by excreta. Dr. Burton, Medical Officer of Health for the S.W. Cheshire Combined Districts, has reported two instances of farmers losing several cattle every year from tuberculosis, although their cowsheds were very good. On his advice the ponds were fenced off, and the water ceased to be used for the cattle, with the result that no further deaths from tuberculosis took place." One is tempted to make further quotation, but space forbids. The book is particularly useful as dealing with the tuberculosis problem from the public health as well as the clinical point of view.

A Manual of Venereal Diseases for Students. By L. W. HARRISON, D.S.O., M.B., Ch.B., M.R.C.P.E. London: Henry Frowde and Hodder & Stoughton. 1920. (16s. net.)

IN this volume Colonel Harrison has remodelled especially for the use of students the text-book on venereal disease which he recently addressed to general practitioners. The result is an eminently practical and reliable book for class-work. Unanimity has not yet been achieved by teachers on the subject of venereal disease, and on various points many teachers will differ from Colonel Harrison. To our mind a more systematic arrangement of the subject-matter would have been preferable. We might draw the author's attention to his recommendation of silver nitrate solution, 1 in 10,000 to 1 in 4,000 for grand lavage. A strength of 1 in 10,000 is decidedly irritating when used in water containing little chloride, and 1 in 4,000 would cause much distress; also, the prescription for suppositories on p. 238 which suggests $\frac{1}{70}$ of a grain of atropin sulphate twice daily should be modified. We hope that in a future edition the important subject of gonorrhœa in women will be more fully dealt with. This addition to students' text-books is welcome for its general soundness, its clear descriptions, and its excellent illustrations.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

EDITED BY GEORGE MACINTYRE.

MEDICINE.

The Nervous Symptoms in Pernicious Anæmia. By H. W. Woltmann, M.D. (*Minnesota Medicine*, August, 1919).—Of 282 cases of pernicious anæmia seen at the Mayo Clinic since 1916, 150 were subjected to a detailed neurological examination, of which 121 (80·6 per cent) presented indisputable evidence of the destruction of nervous parenchyma. Approximately 12·7 per cent of the patients came for the express purpose of seeking relief from symptoms directly attributable to involvement of the nervous system. The chief symptoms were those of disturbed sensations, such as numbness, burning, pains of a stinging or shooting character, &c. Occasionally the girdle pain was complained of, or the sensation of a tight band drawn round the knees. Motor disturbances were rare, the chief complaints being cramps of the calves, tremor, choreiform movements, and in one instance a hemiplegic attack of three days' duration was seen. Cranial nerve disturbances were occasionally noted, such as diminution or perversion of the senses of smell, taste, and hearing.

The author gives two tables to illustrate the results of clinical examination in these cases. Table I gives the diagnosis arrived at, thus :—Subacute combined sclerosis type of lesion, 99·2 per cent ; including posterior sclerosis, 52·2 per cent ; combined sclerosis, 45·4 per cent ; lateral sclerosis, 0·8 per cent ; multiple peripheral neuritis also present, 4·9 per cent ; transverse myelitis with primary optic atrophy, 0·8 per cent.

Table II shows the clinical findings, of which the following are the outstanding features :—Superficial sensation definitely impaired in 42·4 per cent ; disturbance of deep sensation, particularly of vibration and of joint sensation, definitely impaired in 92 per cent ; psychic phenomena in 35·2 per cent ; impaired co-ordination in arms in 15·2 per cent, in legs in 55·2 per cent ; Rombergism in 52 per cent.

Gait—Ataxic in 28·8 per cent, spastic in 4·8 per cent, spastic-ataxic in 8 per cent.

Reflexes—Absence of either patellar or tendo-Achilles reflexes on one or both sides in 24·8 per cent ; patellar reflexes increased in 39·2 per cent ; sustained ankle-clonus in 4·8 per cent ; Babinski positive in 26·4 per cent.

Urinary control—Partial incontinence in 8 per cent, complete incontinence in 0·8 per cent; partial retention in 4 per cent, complete retention in 0·8 per cent.

Muscles—Tonus (legs) increased in 16 per cent, diminished in 10·4 per cent; power in legs diminished in 8 per cent; complete paraplegia in 1·6 per cent; atrophy, localised with fibrillation, in 0·8 per cent; choreiform movements in 0·8 per cent.—A. MUIR CRAWFORD.

Diphtheria Bacilli in Urine (*Giornale della R. Accad. di Med. di Torino*, September-December, 1919).—Dr. Cartesegna and Professor Casassa point out that Loeffler's original view as to the localisation of the bacilli in diphtheria has been abandoned. It is no longer held that bacilli are to be found only in the respiratory passages. After reference to other work on the bacteriological examination of the urine, they record their own experiences. The urine of 100 patients with diphtheria was examined, and diphtheria bacilli were found in 85 cases. The authors conclude that bacilli are almost constantly present, and that their presence is independent of the severity of the attack. Bacilli persist in the urine much longer than in the fauces, and examination of the urine as well as of the throat may be necessary for the detection of carriers.

—ADAM PATRICK.

On The Experimental Infection of the Meninges by Organisms Circulating in the Blood (*Archives Médicales Belges*, January, 1920).—In the course of experimental researches on the treatment of meningitis, Weed found that in cats *B. lactis ærogenes* had great virulence when injected into the subarachnoid space. When this organism was injected into a vein, on the other hand, it was killed off, unless the dose happened to be extremely large. An intravenous dose of 0·5 c.c. of a 24 hours' bouillon culture had no effect on the animal. If, however, the cerebro-spinal fluid was drawn off a few minutes before, or within five hours after, the intravenous injection of even a smaller quantity (0·25 c.c.), meningitis invariably followed. Further experiments led to the conclusion that the essential factor in the invasion of the meninges by organisms circulating in the blood was the lowering of the pressure in the cerebro-spinal fluid, whether this was produced by chemical or by mechanical means.—ADAM PATRICK.

SURGERY.

Prostatectomy. By Henry G. Bugbee, New York (*Boston Medical and Surgical Journal*, July, 1920).—Bugbee gives a careful historical review of the different stages of advance in the pathology and surgery of the prostate. His main classification is, of course, that of (1) fibro-adenomatous mass; (2) fibrosis of the gland throughout; (3) carcinoma; but (4) he points out that infection without hypertrophy and infection with prostatic calculi may also warrant prostatectomy; and (5) he recognises an additional type of vesical obstruction where there is no real change in the prostate, but in which muscular hypertrophy, or mucous membrane hypertrophy (usually sequent on chronic inflammation), or hypertrophy of the subcervical group of glands, or slight middle lobe enlargement, may simulate a condition requiring prostatectomy.

Diagnosis is first and most important, and the cystoscope should be used as soon as relief of urgent symptoms has been obtained. A small instrument (18 F.) is counselled. In addition to cystoscopy, rectal palpation, with empty bladder, and with cystoscope in position, is essential.

Not only the pathology of the patient's prostate is to be studied, but that of the patient's whole vital processes. "When we hear of prostatectomies being arranged for, and dates set for operation before the patient is seen, we wonder where the patient's interest comes in."

As regards treatment, Bugbee reminds us that the amount of residual urine and the presence or absence of infection are not as important deciding factors as the character of the obstruction. He discusses the perineal and suprapubic operations, and decides for the latter in two stages. In the first stage he uses a mushroom catheter for drainage. A week or ten days elapses, during which renal tests are carried out: blood urea content, phenosulphonephthalein output, total quantity of urine, and specific gravity. In one case three months' drainage was required before these renal tests were satisfactory. The scarring, due to long continuance of fistula, does not seem to be a great drawback, as after prostatectomy of case above noted, seven days only elapsed after second operation before wound was healed. Bugbee enucleates by inserting a finger into internal urethra; a separation of the lobes takes place, the urethral mucous membrane separating at the point of separation of lobes. The finger is swept around between adenomatous mass and prostatic capsule, freeing tumour, prostate being elevated by fingers of assistant in rectum.

Hæmorrhage is controlled by "Hagner's bag" (evidently hydrostatic dilatation of a rubber bag with tube *per urethram*, and traction on tube to occlude cavity by pressure of distended rubber—a de Ribes' bag in placenta prævia would act similarly). This bag is held in position by traction for twelve hours, then released, emptied, and allowed to remain in position, to be distended again if bleeding recurs. Bugbee has not found the second time of using to be called for. The bag is removed in twenty-four hours and the bladder drained by a catheter *per urethram*. The suprapubic wound is drained by a gauze drain, and it is endeavoured to get, by packing carefully, a healing of bladder wound before external layers close. Average time for closure is twelve days.

According to Bugbee, the most important phase in the removal of the gland is the control of hæmorrhage.—John MacIntyre.

MATERIA MEDICA AND THERAPEUTICS.

Tutin: A Pressure-Raising Glucoside (*New Zealand Med. Jour.*, February, 1920).—J. Macpherson, in investigating the relative value of some drugs, other than sedatives and hypnotics, in the treatment of states of excitement occurring among the insane, and which are always accompanied by a low blood-pressure, experimented with tutin, a substance which was known to raise the blood-pressure. Tutin is the glucoside obtained from the tutu plant, a species of Coriaria, found in New Zealand, which is responsible for many deaths among stock.

The preparation used was a pure solution of tutin, containing 1 mg. per c.c., and the drug was given by hypodermic injection. It was found that there was a rise of 15 mm. in the blood-pressure within half an hour, and that this rise persisted for three days, thereafter gradually coming down to normal in two to four days. Along with this rise in pressure there was a marked increase in the amount of urine. In addition, it was noted that there was some looseness of the bowels produced.

Macpherson found that tutin promptly relieved two cases of bronchial asthma, and in a case of dementia præcox, in whom obstinate constipation with tympanites became complicated by suppression of urine, the bodily condition was relieved. From his observations Macpherson regards tutin as a heart tonic in cases of broken compensation with œdema; as a diuretic; as a purgative or adjuvant to purgatives; and as a general tonic.—J. C. MIDDLETON.

Books, Pamphlets, &c., Received.

Medico-Tropical Practice: A Handbook for Medical Practitioners and Students, by Gilbert E. Brooke, M.A., L.R.C.P.Edin., D.P.H. Second edition, revised throughout and rewritten. With 61 illustrations. London: Charles Griffin & Co., Limited. 1920. (18s. net.)

Surgery of the Heart, being the Bradshaw Lecture delivered before the Royal College of Surgeons, 11th December, 1919, by Sir Charles A. Ballance, K.C.M.G., C.B., M.V.O., M.S., F.R.C.S.Eng. London: Macmillan & Co., Limited. 1920. (10s. 6d. net.)

Manual of Medicine, by A. S. Woodwark, C.M.G., C.B.E., M.D., F.R.C.P. Second edition. London: Henry Frowde and Hodder & Stoughton. 1920. (16s. net.)

A Handbook of Midwifery for Midwives, Maternity Nurses, and Obstetric Dressers, by Comyns Berkeley, M.A., M.C., M.D. Fifth edition, enlarged, with colour frontispiece, and 74 illustrations in the text. London: Cassell & Co., Limited. 1920. (7s. 6d. net.)

A Synopsis of Medicine, by Henry Letheby Tidy, M.A., M.D., B.Ch. Bristol: John Wright & Sons, Limited. 1920. (26s. net.)

Dr. Elsie Inglis, by Lady Frances Balfour. With a Foreword by Sir William Macewen, M.D. London: British Periodicals Limited. 1920. (2s. 6d. net.)

The Extra Pharmacopœia of Martindale and Westcott, revised by W. Harrison Martindale, Ph.D., Ph.Ch., F.C.S., and W. Wynn Westcott, M.B., D.P.H. Seventeenth edition. In two volumes. Vol. I. London: H. K. Lewis & Co., Limited. 1920. (27s. net.)

The Assessment of Physical Fitness by Correlation of Vital Capacity and Certain Measurements of the Body, by Georges Dreyer, C.B.E., M.A., M.D., in collaboration with George Fulford Hanson. London: Cassell & Co., Limited. 1920. (10s. net.)

Lectures on Surgery to Nurses, by Alan H. Todd, B.Sc., M.S. London: Edward Arnold. 1920. (7s. 6d. net.)

Medical Gymnastics in Medicine and Surgery, by E. Bellis Clayton, M.B., B.C. London: Edward Arnold. 1920. (5s. net.)

Gonococcal Infection in the Male, for Students and Practitioners, by Norman Lumb, O.B.E., M.B., B.S. London: John Bale, Sons & Danielsson, Limited. 1920. (25s. net.)

Infectious Diseases: A Practical Text-Book, by Claude Buchanan Ker, M.D., F.R.C.P.Ed. Second Edition. London: Henry Frowde and Hodder & Stoughton. 1920. (£2, 2s. net.)

The Essentials of Histology, Descriptive and Practical, for the Use of Students, by Sir Edward Sharpey Schafer, F.R.S. Eleventh edition. London: Longmans, Green & Co. 1920. (14s. net.)

MEDICAL DIARY.

1920.

Dec. 1—Post-Graduate Medical Association, Royal Infirmary, 4-15 p.m.—Clinical Demonstration by Mr. Henry Rutherfurd.

,, 3—Royal Medico-Chirurgical Society, Faculty Hall, 8-30 p.m. Discussion on "The treatment of gastric and duodenal ulcer," to be opened by Professor R. Stockman, Mr. J. H. Nicoll, and Dr. R. O. Adamson.

,, 6—Royal Faculty of Physicians and Surgeons, Faculty Hall, 4 p.m.—Monthly Meeting.

,, 8—Post-Graduate Medical Association, Victoria Infirmary, 4-15 p.m. —Clinical Demonstration by Dr. Ivy McKenzie.

,, 9—Southern Medical Society, Medical Club, Carlton Place, 8-30 p.m.

,, 14—Northern Medical Society—"At Home," Grosvenor Restaurant, Gordon Street, 7 p.m.

,, 15—Post-Graduate Medical Association, Royal Samaritan Hospital, 4-15 p.m.—Clinical Demonstration by Dr. Nigel Stark.

,, 16—Northern Medical Society, Royal Philosophical Society's Rooms, 207 Bath Street, 8-30 p.m.—Paper by Dr. Robert Jardine.

,, 21—Odontological Society, Dental Hospital, 8 p.m.—"The uses of x-rays in dental practice," by Dr. Charles Read, L.D.S.

,, 22—Post-Graduate Medical Association, Eye Infirmary, 4-15 p.m. Clinical Demonstration by Members of the Staff.

1921.

Jan. 12—Post-Graduate Medical Association, Western Infirmary, 4-15 p.m. —Clinical Demonstration by Professor Stockman and Mr. Edington.

,, 14—Royal Medico-Chirurgical Society, Victoria Infirmary, 8-30 p.m. Clinical Demonstration by Members of the Staff.

,, 18—Odontological Society, Dental Hospital, 8 p.m.—Paper by Mr. W. D. Oswald, L.D.S.

,, 19—Post-Graduate Medical Association, Royal Infirmary, 4-15 p.m.—"Modern treatment of diabetes," by Dr. Cowan and Dr. J. K. Rennie.

The Editors will be glad of the assistance of Secretaries of Societies in keeping this Diary complete and up to date.

GLASGOW.—METEOROLOGICAL AND VITAL STATISTICS FOR THE FOUR WEEKS ENDED 20TH NOVEMBER, 1920.

	Week ending			
	Oct. 30.	Nov. 6.	Nov. 13.	Nov. 20.
Mean temperature,	42·5°	45·8°	49·7°	47·4°
Amount of rainfall, ins.	0·00	0·22	1·38	1·49
Deaths (corrected),	345	348	319	323
Death-rates,	16·2	16·3	15·0	15·1
Zymotic death-rates,	1·0	1·0	0·9	0·8
Pulmonary death-rates,	4·7	5·0	4·6	4·2
DEATHS—				
Under 1 year,	103	92	74	80
60 years and upwards,	98	110	84	84
DEATHS FROM—				
Small-pox,	1	2	...	...
Measles,	1	3	1	...
Scarlet fever,	1	3	2	1
Diphtheria,	3	3	7	3
Whooping-cough,	4	...	3	8
Enteric fever,	...	2	...	1
Typhus,	...	...	...	...
Cerebro-spinal fever,	1	...	1	3
Diarrhœa (under 2 years of age),	12	11	7	5
Bronchitis, pneumonia, and pleurisy,	88	94	81	79
CASES REPORTED—				
Small-pox,	1	3	3	6
Cerebro-spinal meningitis,	3	3	2	3
Diphtheria and membranous croup,	56	62	44	50
Erysipelas,	18	18	31	26
Scarlet fever,	92	79	94	91
Typhus fever,	...	...	...	...
Enteric fever,	1	5	12	7
Phthisis,	53	41	46	45
Puerperal fever,	6	6	4	8
Measles,*	22	20	39	37
Ophthalmia neonatorum,	12	7	19	11

* Measles not notifiable.

SANITARY CHAMBERS,

GLASGOW, 25th November, 1920.

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